MAY, 1959

Commercial Fertilizer

and PLANT FOOD INDUSTRY

KRAFT BAG CORPORATION, through correct construction of your multiwall shipping sacks, will reduce seepage and spoilage of contents while minimizing your shipping and storage problems.

If your product fits into a bag –
let us make the bag to fit your product!

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Integrated mills at St. Marys, Georgia and Gilman, Vermont

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• St. Marys Kraft Corp.
• Gaylord Container Div.
• The Lillyland Corp.
• Kraft Bag Corp.

KRAFTPACKER

Open Mouth Bag Filling Machine provides maximum accuracy and speed. May we tell you about our stainless steel models? Remarkable in performance. Surprisingly low in price.

☐ We are interested in improving our bag.
☐ We are interested in your Kraftpacker.

NAME OF COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____ PRINCIPAL_____

PRODUCT MFD._____

SMIROW is the favorite natural organic of fertilizer manufacturers and farmers-and has been since 1921.

ONE HUNDRED PER CENT natural organic, uniform in texture and color, excellent mechanical condition, dust free – that is SMIROW tankage. There is no substitute for SMIROW's combination of benefits for fertilizer manufacturers and farmers.

Used in mixed fertilizers or applied direct, SMIROW provides sustained, even-feeding for that all-season effect on plant growth. SMIROW is not a synthetic — but 100 percent natural organic.

Put more customer benefits in your fertilizer —add to its selling power—with SMIROW tankage, the 100 percent natural organic nitrogen.

Let us figure the cost of SMIROW delivered to your plant.

SMITH SMIROW ROWLAND

SMITH-ROWLAND CO.

P. O. BOX 1219, NORFOLK 1, VA.

SMITH-DOUGLASS SD

A DIVISION OF SMITH-DOUGLASS, INCORPORATED

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Commenting Freely

by BRUCE MORAN

Here's a brief text, from the New Jersey AES bulletin of January-February: "With the development of quality controls and rigid standards by industry and the vigilance of regulatory agencies the customer can now purchase these commodities with confidence and assurance that each product is as labeled." They were speaking of feeds, fertilizers and pesticides.

The sad part of it is that—while farmers may respect the figures on the tag, they do not have enough respect for many brands printed on the bag. They do not walk up to the dealer counter and say "Give me so many hundred pounds of blank brand". At least they do not say it often enough.

Nor do they buy enough, mostly, of what they are influenced to buy. It is odd that they should take the advice of counsel on brand, and ignore the advice of the same counsellor on how much plant food to use!

We have a long, long way to go before saturation even shows on the horizon!

Offer your customers an agronomically superior fertilizer with **long-feeding, insoluble nitrogen**

Use Du Pont UAL-37

Growers in recent years have shown an ever-increasing interest in fertilizers that furnish slower-acting, long-feeding nitrogen. They know the value of nitrogen that nourishes plants at the rate required for maximum growth and yields—that resists leaching and remains in the root zone where plants readily absorb it.

Du Pont UAL-37 furnishes nitrogen in three forms—ammonia, soluble organic (urea), and insoluble organic. One-fifth of the nitrogen is the insoluble portion. It's of proven high agronomic value, particularly for long-season crops and grasses.

The insoluble nitrogen supplied in UAL-37 is long-feeding, of the ureaform type. Its continuous rate of nitrification yields available plant food long after soluble forms have been exhausted.

Take advantage of the growing trend toward long-feeding fertilizer materials with UAL-37. Du Pont specialists can give you at-the-plant advice, and stand ready to assist you in profitably formulating mixtures containing UAL-37. For further information on UAL-37, fill out and mail the coupon.

HERE ARE OTHER IMPORTANT ADVANTAGES OF DU PONT UAL-37

- Produces mixed goods of outstanding physical properties, because the ureaform in the mixture has a specific conditioning effect.
- Safe in granulation . . . no danger of flash fires and less stack. Gives firm, uniform, stable granules, best for storage and application.
- Suitable for either batch or continuous mixing.
- Gives mixed goods better "feel"—minimizes caking, segregation, and dusting.
- Won't corrode regular fertilizer manufacturing equipment, including ordinary steel and aluminum.
- Prompt, dependable delivery enables you to schedule your production with confidence.

URAMON®
AMMONIA LIQUORS

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department, Room N-2539
Wilmington 98, Delaware

Dear Sirs: Please send me more information on UAL-37.

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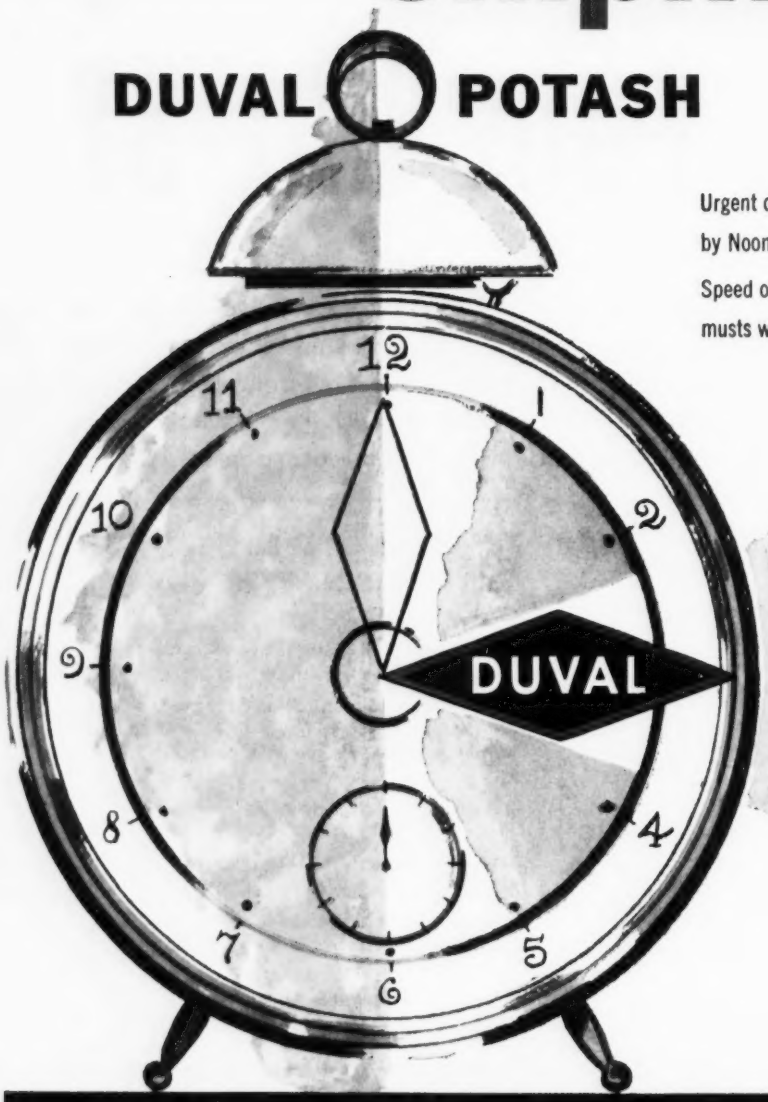
*Firm*_____

*Address*_____

*City*_____ *State*_____

same day shipment

DUVAL POTASH



Urgent orders shipped same day if received by Noon or possibly mid-afternoon.

Speed of handling and quality are always musts with Duval and Ashcraft-Wilkinson Co.

High Grade Muriate of Potash...

DUVAL SULPHUR & POTASH COMPANY

Exclusive Distributors

ASHCRAFT-WILKINSON CO.

HOME OFFICE

ATLANTA, GEORGIA

Cable address: Ashcraft

Norfolk, Va. • Charleston, S. C. • Tampa, Fla. • Jackson, Miss. • Columbus, Ohio • Montgomery, Ala. • Des Moines, Iowa

Count on a Sohio contract to

Figure every nitrogen need in your favor

FIGURING your nitrogen requirements is often the difficult part of planning next year's program. But a Sohio contract ends much of the work and worry.

Sohio technical service personnel will help evaluate your past year's program. They'll help you plan production so you'll parallel industry trends . . . toward higher nitrogen complete fertilizers . . . or the use of supplemental nitrogen materials.

You'll have full flexibility in formulating, too, because Sohio offers a complete line of nitrogen solutions. Sohiogen solutions — containing varying combinations of ammonia, ammonium nitrate and urea — are blended to a wide range of chemical and physical properties. That's why Sohio can suggest the *one best solution* for your entire operation.

Important, too, with your requirements scheduled Sohio can plan production to meet your specific product needs and timetable to serve you even better.

Have the "Man from Sohio" explain how a Sohio contract for the coming year will benefit you by figuring every nitrogen need in your favor.

See Sohio first for high quality anhydrous ammonia — aqua ammonia — coated 45% or uncoated 46% urea — and 18 nitrogen solutions, including those containing urea.

. . . we're serious about SERVICE at Sohio

SOHIO CHEMICAL COMPANY

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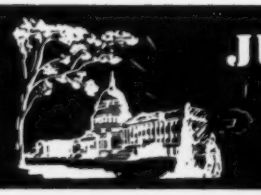
12-59



JUST AROUND THE CORNER

By Vernon Mount

Fidel Castro, as this department pointed out in February, is a problem child. We mentioned, at the time, a number of concerns in the fertilizer industry which could suffer in a big way if policies in Cuba go against capital, free enterprise or Americans in general.

While Castro himself, during his US trip, said Cuba would stand with us in any conflict with communism, the fact remains that he is surrounded by communist "advisers" who keep him insulated from the really competent advisers he has available.

Honest and well-intentioned as he is, he could still be swayed by the red clique around him, because he is also ignorant of too many fundamentals of economics, politics, diplomacy. This is a time for all who have investments in Cuba, or who think of business relations there, to study the picture carefully and well before proceeding.

Yours faithfully,

Vernon Mount

BALANCE

it's always important to bag-buyers

No *one* thing makes a kite fly. And, in the bag business, success requires that many essentials be present in perfect balance.

With Chase bags, this includes minute quality control in production . . . knowing how and where to select the right paper or other material for absolute protection without waste . . . and giving the kind of individualized customer service that keeps the name Chase sky-high among bag users.

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BAG COMPANY

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BAG PLANTS AND SALES OFFICES COAST TO COAST – A NATIONWIDE STAFF OF BAG SPECIALISTS

HOW TO GET THE MOST FOR YOUR FERTILIZER MACHINERY DOLLAR

Before You Buy, Check Sturtevant's Answers to These Key Questions

Q - How much experience is built into the design?

A - You get the benefit of 84 years of practical fertilizer industry experience in each Sturtevant machine you buy. Unrivaled for fertilizer plant engineering know-how, Sturtevant originated the 'Unit' idea. Whether your need is for a replacement pulverizer or mixer, or a completely modern granulating unit, Sturtevant-engineered machinery always can be depended upon to fit your requirements like a glove.

Q - Is the machinery engineered for peak-load efficiency?

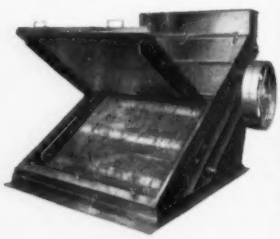
A - All details in each Sturtevant machine have been proved by years of peak-load performance in fertilizer plants. Rugged construction that withstands the most slam-bang use, gears designed to always perform dependably, bearings that stand up under the heaviest loads, all can be taken for granted in Sturtevant machinery. Many Sturtevant machines have been operating at top capacity and efficiency for well over a quarter of a century.

Q - How accessible is the machinery for clean-outs and repairs?

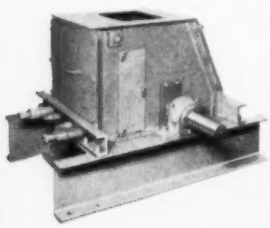
A - Clean-outs are a constantly recurring problem in the operation of a fertilizer plant. And minor repairs on hard-to-get-at machinery can consume hours of costly man and production time. Sturtevant's practical "Open-Door" design guarantees quick accessibility — for clean-outs and repairs. Any parts requiring cleaning or maintenance are quickly exposed by "One Man in One Minute".

For rugged, reliable, efficient machinery you can depend upon for years — or for engineering assistance in planning or upgrading your fertilizer unit — it will pay you to consult Sturtevant. Write to STURTEVANT MILL COMPANY, Clayton St., Boston 22, Mass.

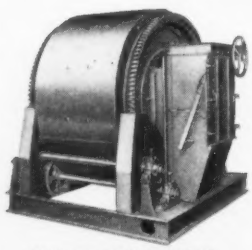
ELEVATOR



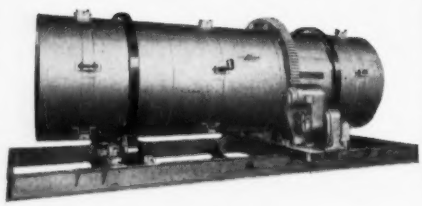
B-B SCREEN



ROTARY PULVERIZER



MIXER - AMMONIATOR



GRANULATOR

COMPLETE GRANULATION PLANTS
MIXING and SHIPPING UNITS
DEN and EXCAVATORS
CONVEYORS
FEEDERS and OTHER ACCESSORIES
MICRON GRINDERS
AIR SEPARATORS
CRUSHERS and GRINDERS

For further information, write Sturtevant today.

STURTEVANT MILL CO.

Dry Processing Equipment

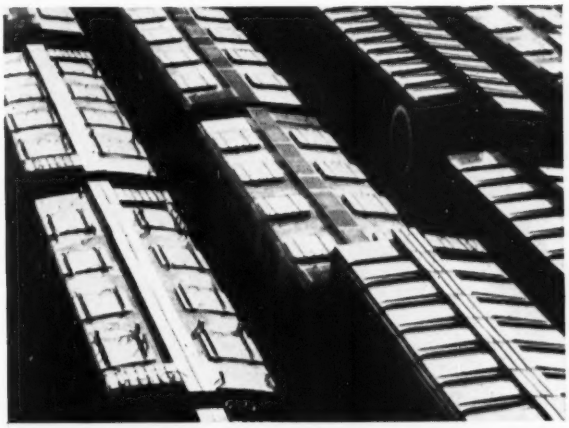
The "OPEN-DOOR" to *lower* operating costs over *more* years

Team up Cyanamid's phosphate products and services for superior mixed fertilizers, economically produced

At Brewster, Florida, Cyanamid mines high grade phosphate rock and manufactures quality TREBO-PHOS* Triple Superphosphate and phosphoric acid.

Add to these fine products Cyanamid's technical and traffic service and you've got an unbeatable combination. Here are a few of the ways Cyanamid helps you manufacture better mixed fertilizers for less money.

Product quality — Porosity of magnified (30x) TREBO-PHOS granule shows why it ammoniates up to 5% without evolution of fumes. Porosity is *controlled;* TREBO-PHOS does not pick up moisture readily, produces a dry, drillable, well-conditioned fertilizer.



Shipping service — Cyanamid traffic experts are experienced at routing phosphate shipments to eliminate avoidable delays. Your plant keeps humming along on schedule. This service is yours when and as you desire it.

Product planning — Cyanamid Technical Service personnel have country-wide experience in formulation and manufacture of mixed fertilizers at lowest cost. Often, what may be new problems for you, are solved problems for them.

Manufacturing assistance — Cyanamid people are versatile. They work where you work, help you get more out of your facilities. Often, they have suggested changes in procedure that have resulted in better mixed goods, produced more economically.

*TRADEMARK

To manufacture fertilizers that sell...
mix with Cyanamid's Phosphates and Service

TREBO-PHOS* TRIPLE SUPERPHOSPHATE | PHOSPHATE ROCK | PHOSPHORIC ACID

American Cyanamid Company, Phosphates and Nitrogen Department, N. Y. 20, N. Y.

CYANAMID
PHOSPHATE PRODUCTS

ENGINEERED for high speed packaging, St. Regis open mouth bags for fertilizer include such time-savers as thumb notch, top creasing, offset gussets and spot pasting.

ADD LCPT* to your open

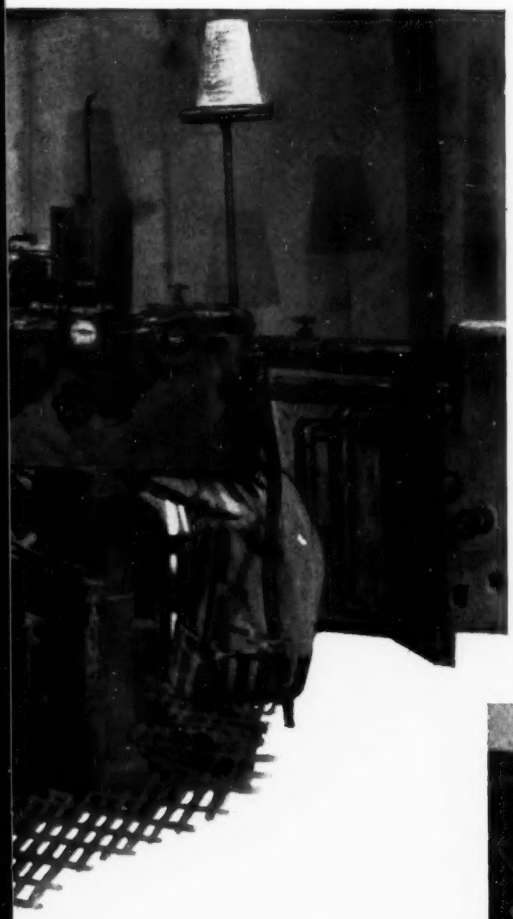
*Lower Cost Per Ton

Best way to protect your fertilizer profits starts with the bags you use and the way you pack them. In both areas, St. Regis may be your answer.

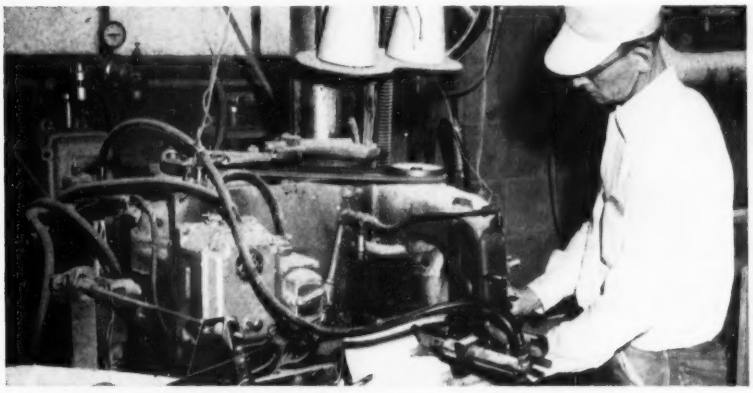
Whether you pack fifties, eighties or hundreds, St. Regis saves you money these important ways:

- St. Regis Sales Engineers can recommend basis weights and sizes of bags trimmed down to actual needs of your products—save on every unit you ship.
- St. Regis bag filling and closing equipment provides peak production to meet seasonal demands for greater outputs.
- St. Regis bag design specialists can provide you with bags that have more effective point of sale display built in to build sales.

Whether you want a whole new packing house, or just a single machine... or whether you simply need open mouth or pasted valve bags themselves... your



EQUIPMENT by St. Regis takes advantage of the savings made by St. Regis bags. Latest is the 185AS Bagging Scale, providing high production rates with fast grade changes and minimum maintenance.



SAVES by eliminating leakers, guaranteeing effective closures. St. Regis Thread Saver keeps pace with higher speed production.

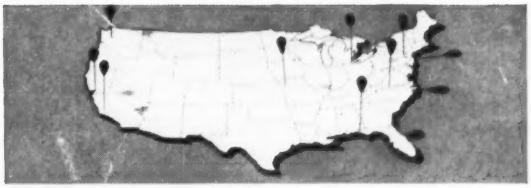
mouth packing with ST. REGIS BAGS

St. Regis Representative is ready to work with you. Remember—in multiwall packaging, *St. Regis means lower cost per ton!*

MULTIWALL PACKAGING DIVISION

St. Regis PAPER COMPANY

150 EAST 42ND STREET, NEW YORK 17, N.Y.



MONEY and time are saved for you by 8 conveniently-located St. Regis plants that make bags available when you want them.

The Versatile Fungicide

Is there another **Fungicide** offering these advantages?

You get so many more advantages with Copper fungicides — used as a spray or dust on practically all truck crops in the control of persistent fungus diseases — Tri-Basic provides control of citrus and grape diseases, also on many deciduous fruits — Tri-Basic has excellent adherence qualities and protects longer — lower disease control cost, greater yield of top quality produce.

Longer Protection
Easy to Apply
Economical
Upgrades Quality of Fruits & Vegetables
Longer Shelf Life
Corrects Copper Deficiencies
Effective Control
Always Dependable
Compatible
Plentiful Supply

TRI-BASIC COPPER SULFATE
Quality Controlled from Mine to Finished Product

For further information please make requests on your company's letterhead.

TG TENNESSEE CORPORATION
TENNESSEE CORPORATION
617-29 Grant Building, Atlanta, Georgia

Salesmanager Robert McCormick of the I. P. Thomas division of Dixon Chemical Industries, Inc., Merchantville, N. J. has caused some double-takes in the retail fertilizer industry. To promote the popularity of easy-carry 50-pound bags of soil nutrient handled by his company, he barraged over 1,000 Greater Philadelphia area garden supply and hardware stores with pamphlets showing Grace Curry, Philadelphia model, buying—and carrying home—a bag of chemical soil-nutrient for her lawn. All garden supply store managers received autographed copies of a photo of Miss Curry—with her bag of Dixco Gro-Magic.

Science Takes Pity on Lawn-mowing Men

USDA think it is only a matter of time until they can keep your lawn down to the point where it will need mowing only a couple of times a year. Meanwhile, have you tried some of the creeping grass—centipede and such—which keeps its head down pretty nicely in our personal experience?

St. Lawrence Seaway To Aid Fertilizer Plants

Fertilizer producers in Northern US and in Canada are finding new opportunities for delivery economy as the St. Lawrence Seaway finally reaches operation, after a couple of generations of controversy. While the plans for its use are not generally revealed, such concerns as Canadian Industries Ltd., Dominion, International Minerals and Chemicals, Cyanamid of Canada, Dow—to name just a portion of the list—are in position to get water rates where these are economical.

A drawback may be the fact that the Seaway may be frozen just at the time when fertilizer deliveries are likely to be running at peak, unless ice-breaking plans are put into execution. And these may raise rates.

The use of the Seaway, however, is being given very serious thought—and we may soon begin getting announcements of the use to be made of it by suppliers and fertilizer manufacturers.

Study of Fertilizer On Popular Seedlings

Three planting studies have recently been established by the N. C. Piedmont Hardwood Forest Research Project.

In Duke Power Company lands near Mt. Holly, a study to compare the growth of planted yellow poplar with loblolly pine, and a study to determine the effects of fertilization on yellow poplar seedlings have been installed.

Fertilization of hybrid poplar seedlings forms the basis for a third study established recently on lands of the American Furniture Company near North Wilkesboro.

As far as can be determined, this is the first research work dealing with the fertilization of hardwood tree species in this section.

NPFI Sponsors 88-County Fertility Projects

Intensified community soil fertility projects, initiated largely through the efforts of the National Plant Food Institute, are being carried out this year in 88 counties in 14 states across the country.

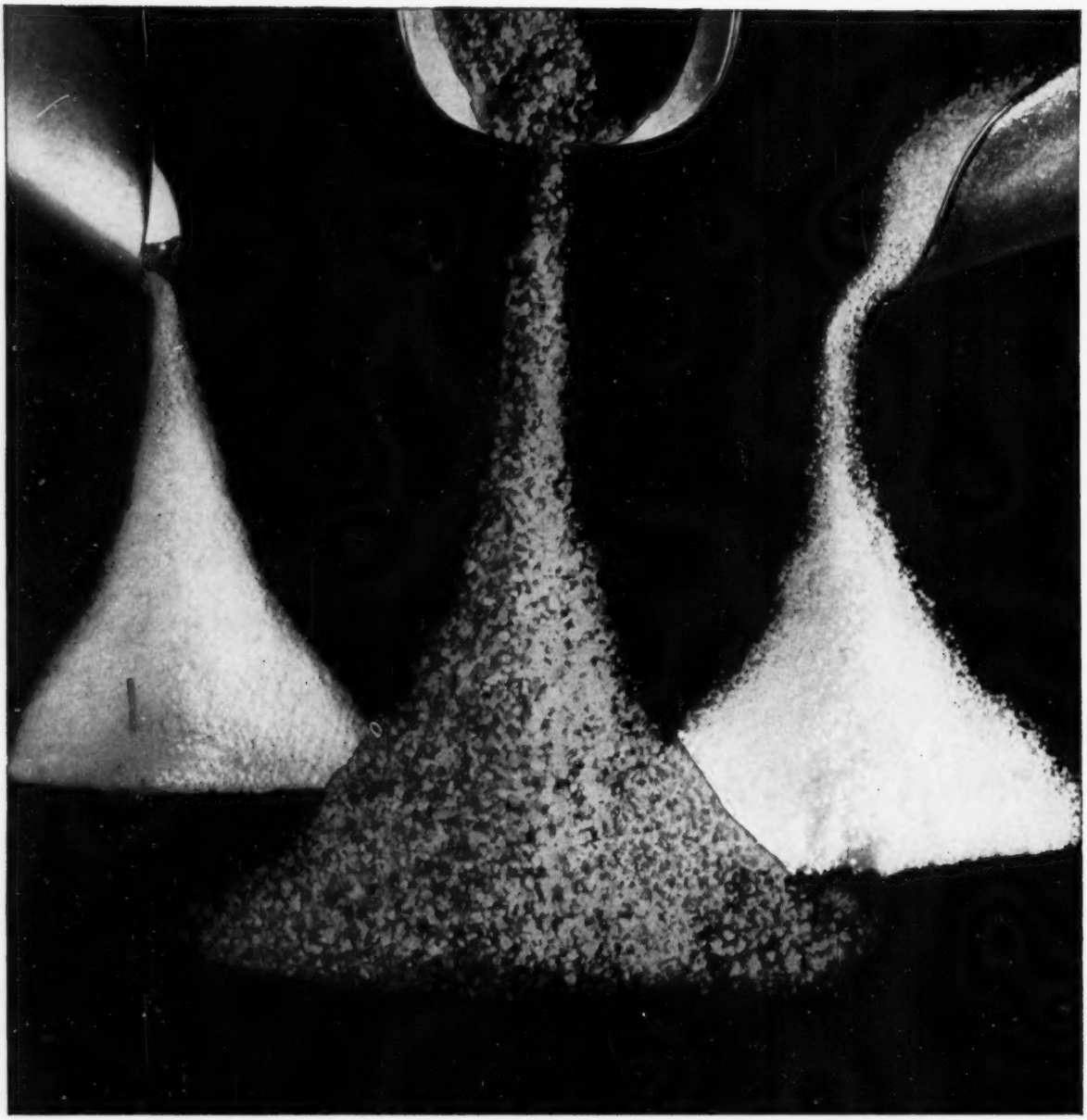
These various programs are designed to boost agricultural income by getting farmers to have their soil sampled and to follow lime and fertilizer recommendations furnished on the basis of soil tests.

Following the spectacular results obtained in 1958 in Georgia and North Carolina the Institute was able to initiate pilot operations in 12 additional states this year.

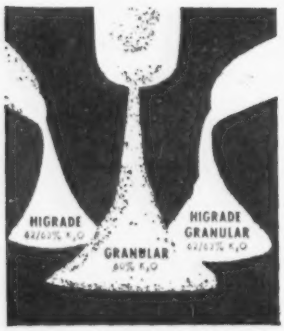
"These might be called 'motivation studies', because they have been established under controlled conditions and the results will be closely analyzed," Dr. Russell Coleman, Executive Vice President of the Institute, said. "Assuming results comparable to those obtained in Georgia and North Carolina in 1958, the spread within the pilot states and in other states should be rapid in 1960."

Lady Guano Hunter

Out in Texas there's a lady named Mrs. Lela Donnell, v-p of American Guano Corp., who has personally inspected 250 bat caves during the past two years, and whose company has orders for a million tons of guano. The first shipment has already gone out from the headquarters recently established at Brady.



Better fertilizers begin with three grades of free-flowing USP potash



USP offers *three* outstanding grades of potash to meet the most exacting requirements of modern fertilizer production: two white grades—Higrade muriate and Higrade Granular muriate—each containing 62/63% K_2O give you more potash per ton than any other type of muriate. And USP's Granular muriate, containing 60% K_2O, is preferred where a still larger particle size is required.

All three grades are specially refined to remain free-flowing and resist caking for easier handling, manufacture and application.

Contact the United States Potash Company for complete technical data and shipping information. Our expertly staffed Technical Service Department welcomes your inquiries.

UNITED STATES POTASH COMPANY
DIVISION OF UNITED STATES BORAX & CHEMICAL CORPORATION
50 Rockefeller Plaza, New York 20, New York
Southern Sales Office: Rhodes-Haverty Building, Atlanta, Georgia

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MEMBER: AMERICAN POTASH INSTITUTE

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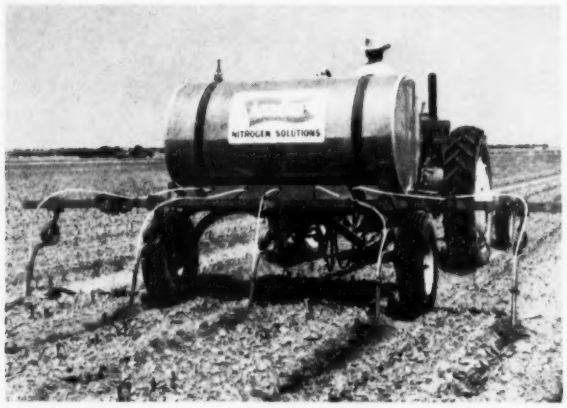
Arcadian® News

Volume 4 | For Manufacturers of Mixed Fertilizers | Number 5

How to Extend Your Season and Sell More Tonnage Now



The heavy shipping season for mixed fertilizers is now behind us. But the season is not yet over for alert manufacturers of mixed fertilizers. They will start now to extend their season and increase their total tonnage, by aggressively selling nitrogen materials (liquid and dry) for top-dressing and side-dressing.

Thousands of farmers in your sales territory are now buying nitrogen for supplemental application. It will pay you to make sure that your mixed fertilizer customers buy their supplementary nitrogen from you. It's good business to supply your customers' complete plant food needs.

You strengthen customer loyalty and you get a bigger share of the fertilizer market, when you are prepared to provide all of the mixed goods analyses and straight materials your customers need and want. It pays to establish your prestige and your leadership as a dependable, "full-line" source of supply.

By selling straight nitrogen now, you get many practical benefits: 1) You increase your total sales and profits. 2) You help farmers to get better yields and insure that response to your mixed fertilizers will not be limited by lack of nitrogen. 3) You spread your overhead expense over a bigger tonnage. 4) You keep your sales staff busy. 5) You build farmers into exclusive customers for you and your dealers.

Nitrogen Division, Allied Chemical, sells nitrogen for use in the manufacture of mixed fertilizers and for direct application. Nitrogen Division has always fostered the role of nitrogen in a balanced fertilizer program and has spent millions of dollars to promote the use of mixed fertilizers. Nitrogen Division has also established ARCADIAN® Nitrogen Products as the leading source of supplementary nitrogen for direct application.

(Continued on following page)

(Continued from preceding page)

It will pay you to let Nitrogen Division work with you in helping you to offer your customers a complete line of mixed fertilizers and straight nitrogen materials. Many different ARCADIAN Nitrogen Solutions are available for the manufacture of every mixed fertilizer analysis now in demand. Many different ARCADIAN Nitrogen Products (liquid and dry) are also available for direct application. Powerfully-advertised and promoted, these products are well-known and widely-used by farmers everywhere.

Let Nitrogen Division help you build your volume and your profits. You can extend your season and sell more tonnage right now by contacting the nearest office of Nitrogen Division, Allied Chemical Corporation.


Now is the time to buy
MIXED FERTILIZERS
and Arcadian
AMMONIUM NITRATE
– an ideal combination for big yields!

Here is one of the many Nitrogen Division full-page farm magazine advertisements, promoting the use of mixed fertilizers.

Sampling Can Protect You As Well As Your Customer

Far too few samples are taken and analyzed from the average run of mixed fertilizers. Too few samples at the mixer, the dryer, the cooler and the storage pile, that is. Adequate and efficient sampling in the manufacturing process saves you from costly overages and also protects your customer from goods averaging under plant food guarantees. In the long run, a thorough sampling and testing program at your plant will do both you and your customers far more good than any increase in testing by state fertilizer control laboratories.

Sampling at the mixer reveals the degree of perfection in the mixing of dry ingredients as well as the success of desired chemical reactions between ammonia, superphosphates and any acid that has been added. If your nose doesn't detect any smell of ammonia in the air at the mixer, don't let it stop you from taking samples. Ammonia fumes can escape through ducts, either in a continuous or batch mixer, without the operator being aware of the loss by "smell" test. Even when acid is used to capture excess ammonia, you can still lose ammonia through drafts or suction in flues and ducts. The best system is to take samples at the mixer at intervals throughout the discharge cycle, and in proportion to the volume of materials discharged. You may find out some startling things about the operation of your mixer by analyzing these samples separately.

Sampling Should Be Systematic

Sampling from the dryer should reveal any "burning out" of nitrogen during this phase of manufacture. Samples taken from the cooler should reveal any "classification" of the mix by high velocity air that may strip out unequal amounts of different ingredients. Analysis of these samples can help you adjust and improve your methods of granulation. For both granular and semi-granular goods, this careful check on methods may enable you to produce the right quality and

analysis mixture with minimum use of acid.

Thorough sampling from the pile can tell you what chemical reactions occur in the pile, the effects of separation by particle size, and the results of any contaminants in the pile. Samples taken from the first half day's production of large storage piles can often help you make all needed corrections. But good results from the first day's run are not enough. You must maintain these good operating procedures to get economical formulation and correct plant food proportions.

Some critics say that storage pile sampling is not accurate enough to compare with actual bagging and sampling of fertilizer under inspection conditions. Yet many manufacturers get an excellent check on quality, even from the largest storage piles, by systematic sampling. They take regular samples throughout the building of the pile. They collect the samples from random spots from top to bottom of cone piles, and deep enough to reach through any stratification of materials. For best results, they take samples from at least 10 points in any sizeable pile at each sampling, and start sampling early so that they don't miss the core of the storage pile.

Test Samples Promptly

Speedy analysis of your samples pays off. Some manufacturers have been alarmed by belated reports on mixer samples that showed faulty analysis—reports that were completed long after a big storage pile had been built up. You can waste just as much money in your fertilizer mixer with sampling, if you don't check your samples quickly.

Other manufacturers who discover faulty analysis from mixer samples feel relieved when the storage pile samples show a nearly correct analysis. This is fine as a protection for your customers, but it doesn't save you from ammonia losses and other unnecessary expenses caused by poor mixing. Manufacturing fertilizer is a precision business today—if you want to make money. Regular sampling and prompt analysis of samples can help you keep equipment, staff and operating procedures at an efficient level.

The Nitrogen Division, Allied Chemical, technical staff is ready to help you perfect your sampling methods, and also to assist you in developing the best techniques for analyzing the samples and studying the results. Contact Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y.

Don't Make the Same Mistakes Next Season!

To make your next season better, now is the time to correct any problems and difficulties that caused loss of business this spring.

Bottlenecks in production, bagging, loading and shipping facilities should be analyzed while they are fresh in mind. Schedule necessary changes to be carried out during the off-season months ahead.

If you were caught short on raw materials or mixed fertilizer this spring, try to pin down the reasons now. If additional storage is needed, you will want to line it up soon before another rush season. If you were short on raw materials go over your inventory and scheduling procedure on incoming products and try to set up a system which will permit more accurate advance ordering next season.

Note worn parts in your equipment so that they can be replaced during the summer shutdown. Replenish your stock of necessary spare parts. Check your plant personnel and line up indicated replacements, make promotions and give further training where needed.

Go over the formulae you are now using and compare with the laboratory analyses you have been receiving on your mixed fertilizer samples to determine where adjustment should be made to stay closer to guaranteed grade. Also look for formula changes which will help cut costs next year.

Be Sure Your Customer Knows He Is Satisfied!

The surest way to nail down repeat sales next year is to see to it that customers are satisfied with what they bought from you *this* year! Short of making actual yield checks, your best bet for dramatizing response to fertilizer is to point out growth differences.

A little time spent now to point out these growth differences can pay big dividends in customer satisfaction and those vital repeat sales. Then, too, if there should be cases where your fertilizers are *not* showing the expected response, it's important to know about them so that the necessary corrections can be made before next year's selling season. In that regard, always be watchful for evidences of deficiency in secondary and trace minerals, as well as in major plant foods. Remember that the lack of any one of the elements required for plant growth might very well limit the performance of your fertilizer!

HERE'S THE BIG LINE OF Arcadian® NITROGEN SOLUTIONS

When you purchase your nitrogen requirements from Nitrogen Division, Allied Chemical, you have many different nitrogen solutions from which to select those best suited to your ammoniation methods and equipment. You are served by America's leading producer of the most complete line of nitrogen products on the market. You get formulation assistance and technical help on manufacturing problems from the Nitrogen Division technical service staff. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions.

	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60°F	Approx. Vap. Press. at 104°F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	15
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.184	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.050	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6C	43.0	20.0	68.0	6.0	6.0	9.3	1.180	12	39
6M	44.0	22.0	66.0	6.0	6.0	10.0	1.158	17	14
10	44.4	24.5	56.0	10.0	9.5	11.0	1.114	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.087	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	12.7	1.052	29	1
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.932	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.978	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	-108

Other ARCADIAN® Products: URAN® and FERAN® Solutions • Ammonia Liquor • N-dure® A-N-L® • Ammonium Nitrate • UREA 45 • Nitrate of Soda • Sulphate of Ammonia

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Allied Chemical

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CALIFORNIA

Collier Carbon and Chemical Corporation announced April 16 that it has acquired all outstanding **stock of Chemical Fertilizer Company,** Modesto.

Although Collier controlled, Chemical Fertilizer Company will retain its corporate identity and will continue marketing its fertilizer products under the brand names of "Producers Brand" and "Chem-pells." It will also package some of Collier's Brea Brand fertilizers.

Chemical Fertilizer Company's liquid mixes, single and triple phosphates, and dry mixes, manufactured at its Klaus and Riverbank plants, are marketed through outlets at Arbuckle, Butte City, Clarksburg and Klaus (Modesto), California. Sales for the company last year exceeded a million dollars.

* * *

Calspray were recent hosts to the Northern California Section of the **American Institute of Chemical Engineers. Jim Stichka,** Calspray's project supervisor, related for them the technical operations and the varied production of the plant.

FLORIDA

Pan American Sulphur will build immediately a $500,000 dry bulk and liquid sulphur storage facility at Tampa, which will be able to handle 200,000 annual tons.

* * *

Armour Fertilizer has reached an agreement with the Audubon Society to establish at Panther Point a wildlife sanctuary. Wading birds have adopted a square mile settling basin as their home, and have made a rookery of the dead trees in the area. The rare Wood Ibis, for example, the only North American stork, which was rapidly becoming extinct, is now flourishing in this settling basin. Many other birds, such as egrets, are also using the basin.

IDAHO

J. R. Simplot Co. has signed an agreement to manage and operate the phosphate mines and beneficiating plant at Conda, it was announced last month.

The agreement was signed with **The Anaconda Co.** It is effective immediately.

Product from the mine, which lies north of Soda Springs and has been in operation since 1920, will be shipped to The Anaconda Co. at Anaconda, Mont., and to the Simplot plant, west of Pocatello. It also will be sent to other users of phosphatic materials.

Grant Kilbourne, vice president and general manager of the fertilizer division of the J. R. Simplot Co., said there will be a substantial increase in employment at Conda, which is an open pit phosphate rock mine.

He said the change in operation "should result in doubling the size and scope of the operation, which mined 200,000 tons last year."

Simplot is in process of expanding output of treble superphosphate, including construction of a sulphuric acid plant.

MICHIGAN

Grand Rapids, with new facilities at the sewage plant, is considering marketing a higher grade fertilizer than the one they are now selling for $1 per 80-pound sack. The old grade yielded $14,000 last year. The new product will be offered to gardeners. If the new product is not accepted all fertilizer production may be dropped.

MISSOURI

Missouri Farmers Association, Columbia, is advertising 10 year bonds at 5% to aid in financing their proposed bulk fertilizer blending plant in Kirksville, and a terminal grain elevator in Kansas City.

NEVADA

Agriform of California have established a mixing plant at Fallon, the first of its kind in the State. **Dee Galbraith** is supervising installation and operation. They will produce aqua ammonia, nitrogen-phosphate combinations and other fertilizer mixtures.

NEW JERSEY

Dixon Chemical's new $5,000,000 plant at Paulsboro was reported to us incorrectly as to output, which is to be 300,000 annual tons of sulphuric acid.

Note the interesting merchandising stunt (and the model, too) shown on page 15.

NEW MEXICO

Ravel Brothers, Albuquerque, expect to be in operation by next month with their $250,000 feed and fertilizer plant. **Louis Ravel,** board chairman, says it is the only "basic fertilizer production plant in New Mexico." The fertilizer production capacity will be 50 daily tons.

NEW YORK

Climax Molybdenum is offering to commercial fertilizer producers a new fertilizer additive, Moly-Gro, which contains 42% active molybdenum and comes in 50 and 100 pound drums. This is to be marketed along with their new seed treatment formulation.

OREGON

Pacific Cooperative has received the first shipment made by **TVA** of its new ammoniated superphosphoric acid, of which TVA plans to turn out 3,000 tons this year for use in research and educational programs. It contains 11% N, 33% P.

TEXAS

Hayes Sammons Chemical, Mission, are introducing a new plant food in their area. Mission Brand, as it has been named, is sold as a "complete" plant food in 4-pound poly plastic bags. It contains NPK, plus iron, manganese, copper and molybdenum, and rounds out the Hayes-Sammons line.

WASHINGTON

Bunker Hill have turned over to **Dorr-Oliver** the preliminary process design and layout of the proposed $10,000,000 plant which has been reported previously. While they have land under option at Kennewick, the final decision has not been made. **W. C. Weber,** manager of chemical project sales for D-O is working directly with Bunker Hill. He is an outstanding authority on the type of project on the drawing boards.

WISCONSIN

Agricultural Chemicals, Inc. is hunting a Wisconsin location for a plant to produce 40,000 tons of granular fertilizer by next Spring. The incorporators are men in feed, food processing and agriculture, and the proposed stockholders are expected to be in agriculture too. Capitalization is $750,000.

The plant itself has been designed by **R. P. Koos** of Kenosha, who is former president of **Koos & Son** there, a fertilizer outfit. He will supervise construction when the site is chosen, and operation when the plant is built.

EIRE

Ceimici Teo, the state-sponsored body which owns and operates other types of products is about to report to the Government on a nitrogenous fertilizer plant in County Offaly which has been in the offing since 1946. Ammonium nitrate may be produced from milled peat or anthracite duff in conjunction with limestone. U.S., British, German and French concerns have submitted proposals, so numerous—they say—as to have delayed a decision all this time.

INDIA

Bihar Government's superphosphate plant, near Sindri, which went into production last April, has now been formally opened. It has a capacity of 60,000 annual tons . . . The Trombay plant, which is to produce 80,000 annual tons of fixed nitrogen, is now assured of financing, and will be in charge of **Nagal Fertilisers.**

ISREAL

Fertilisers and Chemicals, Ltd., Haifa, will double capacity in the nitrogen units, and provide capacity for liquid and granulated goods. The plans call for an expenditure of $6,700,000.

KOREA

Choongjoo, the urea plant which is to produce some 85,000 annual tons, made the first step toward operation recently when, during an official inspection trip, the UNC economic coordinator signalled the start-up of the 22,500 kw steam power plant and three ammonia compressors. It was hailed as one of the most brilliant achievements of the US foreign aid program. The $34,000,000 plant is due to be in operation by next month.

NETHERLANDS

Albatros Superfosfaatfabricken, Utrecht, has teamed up with **Cyprus Mines Corp.,** Los Angeles, USA, to set up a sulphuric acid plant near Rotterdam, adjacent to the Parnis plants of A-S. The joint operation will be known as **Albatros Zwavelzuur en Chemicsche Fabriken** which will operate the plant, using pyrites shipped from Cyprus.

PERU

Fertisa, Callao, has gone into production with its first synthetic ammonia plant. Designed and built by **Montecatini** of Italy and employing a Fauser-Montecatini process, the plant will produce in addition to ammonium sulfate and ammonium nitrate fertilizers, anhydrous ammonia, nitric acid and ammonium nitrate.

See photograph.

The $10,000,000 Callao installation will be operated by **Fertilizantes Sinteticos S.A.**—with headquarters in Lima. Peruvian investors subscribed most of the 5 million dollar capital of Fertisa, while the remaining financing was secured on a long-term loan from an Italian bank.

According to Fertisa, the Callao plant is the first in South America to make hydrogen by the partial combustion of fuel oil, using a process developed by Montecatini and in industrial use in Italy and other countries. Northern Peru will supply the fuel oil available in large quantities in that area. Capacity of the partial combustion plant is 16,500 annual metric tons.

An outstanding feature of the fertilizer grade ammonium nitrate plant is its use of a granulating device based on revolving disks giving a prilled product perfectly suitable for direct distribution on the ground. While this technique has been used by the European pharmaceutical and candy industries, it is the first time that it will be employed in the Western hemisphere.

Located ocean-side, the Callao installation will use sea water at the rate of 630,000 gal./hr. to cool the condensers of the thermo-electric power station built on the plant grounds. Based on a 330 day year, the plant will have the following capacity:

20,000 metric tons anhydrous ammonia; 54,000 metric tons nitric acid, 53% by weight; 35,000 metric tons ammonium nitrate — fertilizer and technical grades; 7,500 metric tons ammonium sulfate—fertilizer grade; 1,500 metric tons nitric acid, 98% by weight.

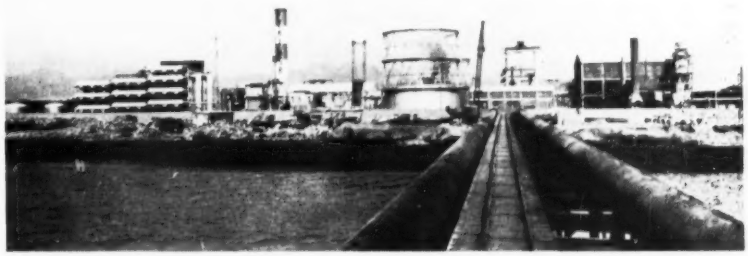
The new plant will considerably improve the supply of fertilizer for Peru's expanding agriculture. Until recently, the country's great natural deposits of guano provided quantities sufficient for domestic consumption, in addition to large tonnages for export. In recent years however, the situation became so acute that a serious shortage of the natural fertilizer resulted. In the transition to synthetic fertilizers, production will be consistent and independent of climatic factors.

WEST GERMANY

Union Rheinische Braunkohlen Kraftstoff A. G. is building near Cologne a urea plant planned for 25,000 annual tons. Ammonia and carbon dioxide will come from the concern's own sources.

SUMATRA

The Indonesian Government has made an agreement with **Standard-Vacuum Oil,** who will supply 5,000,000,000 cubic feet of natural gas annually to supply the government-owned urea plant to be built near Palembang. The Import-Export Bank has been asked to finance the operation.



General view, taken from the sea, of Fertisa fertilizer plant at Callao, Peru. At left of photo is cascade of nitric acid absorption tanks characteristic of the Fauser-Montecatini process. Pipes carry sea water to condenser station in thermo-electric generating plant. Pipes are 350 yards long, 26" in diameter.

Bennett & Clayton in operation

with new ammoniating plant

in NEW JERSEY

Bennett & Clayton Company's all-new plant at Cranbury, New Jersey, was on the last lap to completion when the accompanying pictures were made. Actually production was under way, although limited, as all equipment was not fully installed, and some work on the building was yet to be done, due to prolonged rainy weather. But at that, the entire job was something of a record since it was completed, from start to finish, in approximately 3 months.

The new plant is more than double the size of the old plant, and completely re-designed. Actually only one wall has been used that was a part of the old plant building. The new plant covers approximately 14,000 square feet not including the adjoining warehouse which is 4,000 sq. ft.

A relatively new and very useful feature is the green Corrulux panel stripping in the roof which gives considerable extra light throughout the plant. These strips are strategically placed to give extra light at points where specially needed.

The plant was built to operate with low manpower needs; it has such equipment features as air-operated intake and discharge valves on the mixer, a weigh hopper where one man weighs all the various materials from one big batching cluster-hopper which holds eight separate materials; mixer is equipped to handle various mixtures containing nitrogen solutions, sulphuric acid and urea-formaldehyde solutions (separate spargers feed all three liquids simultaneously and all are controlled by the one batch-weighing man). The elevators have rotary vane feeders so there is no kick back when shovel loaders dump into the feed hoppers, as this gives approximately 90% dust control.

M. T. TUNE
Superintendent

The plant's capacity is approximately 25,000 tons, made possible by the rapid curing sulphuric acid method.

To take care of their many customers groups, B&C has set up a very efficient bagging operation that will handle bags ranging from 25 lbs. to 125 lbs. All shipping is done by two complete shipping units having their own steel supports, so that all machinery is entirely separate from the plant building. Weighing is done on two Richardson Scales (their latest models HA 39 fertilizer bagging scales) and two Bemis double pedestal sewing standards with two Union Special sewing machines on each pedestal—1-80600H for sewing and taping multiwall bags, and 1-80600E for straight sewing without tape or with rip cord.

Each bagger's capacity output ranges between 20 and 30 tons hourly per machine. Telescopic conveyors run into the truck where bags are taken off, speeding up the operation and eliminating any need for extra handling between bagging and loading. Since a high percentage of the capacity is specialty fertilizer, screens are of finer mesh than for regular grades.

Natural gas with brooder-type burners is used to heat the bagging and shipping area. This is a safe and economical means of heating — no fumes, no spillage of oil to create a fire hazard, etc.

At one end of the plant building is housed the mixing and other processing equipment with ample space at hand for materials storage. Adjoining this, a driving area bisects the bin section and connects with the bagging operation. Above one bin section is an overhead conveyor, over the other a shuttle conveyor, both connected by a cross conveyor. The warehouse adjoins and extends on beyond the bagging area.

The plant is located in Cranbury on the Pennsylvania railroad; a rail siding comes off the main line and runs alongside the full length of the plant. The company's own private road runs off the highway and circles the plant with ample room for trucks to back up flush with the covered loading platform.

The plant office is within a few feet of the plant building and affords an ample parking area.

All of the forementioned equipment was furnished by Stedman Foundry & Machine Co., Inc., and was engineered and designed by W. E. Schaffnit, working closely in all plant details with Graham Campbell, former executive vice president of the firm.

Bennett & Clayton Company's management principals are Hans Rosenwald and Edward Powers.

Key to pictures →

1. New addition to plant, showing above roof the top of tower housing two bagging elevators. Also evident are strips of Corrulux paneling in roof, to improve interior lighting.

2. Original building during remodeling; plastic sheet covers then uncompleted tower which houses elevator to feed batching hopper and mixer.

3. Feed end of mixer, with good view of air operated intake valve and pipes conducting solutions and acid to spargers.

4. End view of materials cluster hopper.

5. Scale dial for batching hopper, and (at right) handles controlling 8-cluster materials hopper suspended above batching hopper.

6. This view is slightly to the right of the preceding photograph, and shows gate valves on spouts of cluster hopper as they feed into batching hopper.

7. Operators in position at Bemis dual pedestal bagger with Union Special sewing heads, one for taping and one for straight sewing.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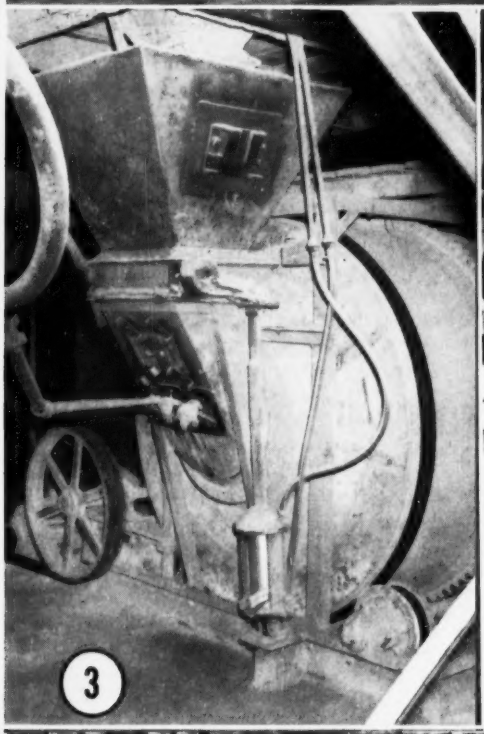
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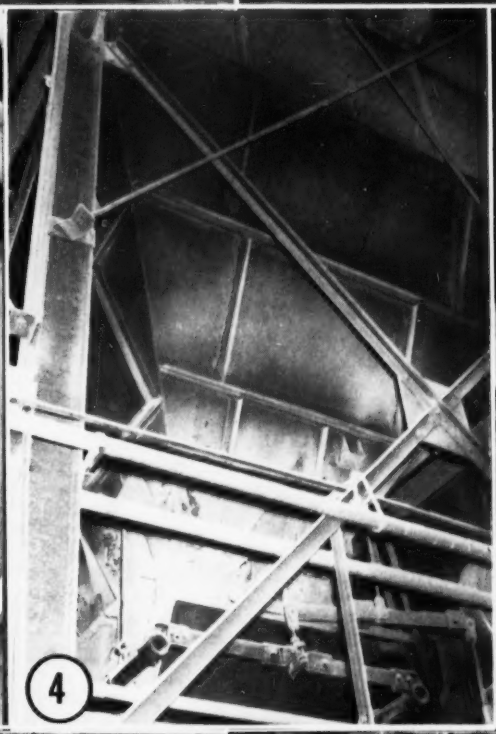
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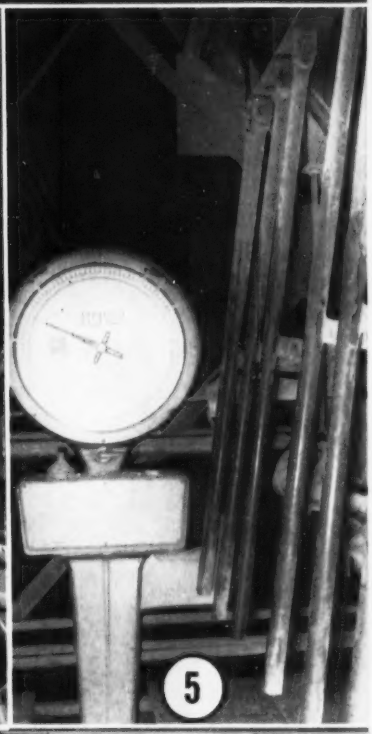
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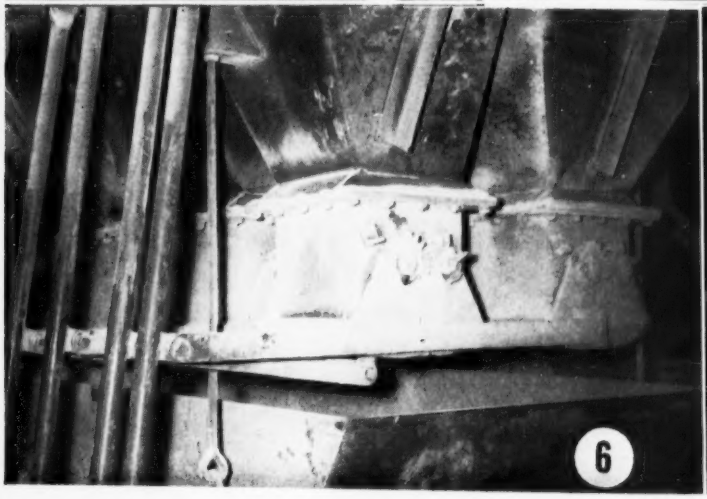
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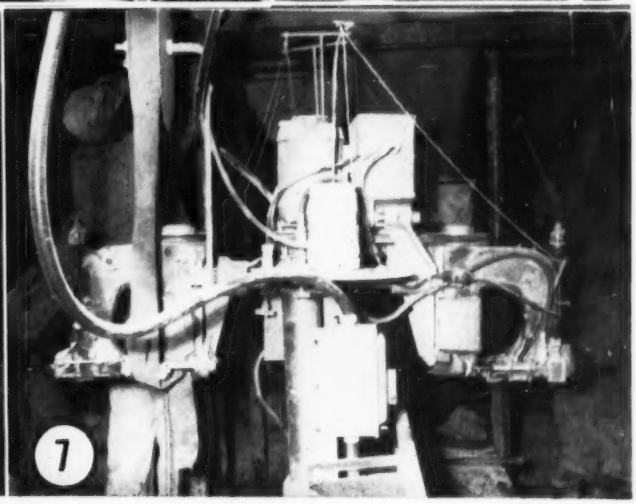
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MATERIALS MARKETS

ORGANICS: Supply of fertilizer organics continues extremely tight. Prices are strong and range nominally from $3.50 to $5.00 per unit of ammonia, bulk, f.o.b. shipping point. Imported leather nitrogenous tankage is indicated at around $5.75 per unit of ammonia in bags, CIF Atlantic Ports.

SEWAGE SLUDGE: Demand is in excess of supply, and production of a major producer has been hampered for several weeks because of mechanical difficulties. Nominal price is $3.25 per unit of ammonia, and 50¢ per unit of APA, bulk, f.o.b. midwestern production.

CASTOR POMACE: Domestic production has been recently offered at $34.00 per ton in bags, f.o.b. middle Atlantic shipping point, for shipment May through October. Supplies of imported material are exhausted at Florida port facilities, and it is reported that scheduled arrivals at Tampa are committed for the next several months.

DRIED BLOOD: Sacked unground blood in Chicago area is indicated at $7.50 to $7.75 per unit of ammonia, and in the New York area around $6.50.

POTASH: Movement is in heavy volume, as most areas are calling for fertilizers in large quantities which require potash. Prices are steady at previously announced seasonal schedules.

GROUND COTTON BUR ASH: Price continues steady on this type of potash, primarily in the form of carbonate of potash, and compares approximately with the cost of domestic sulphate of potash for most areas, somewhat lower on a delivered basis to the Southeast. Supply is adequate.

SUPERPHOSPHATE: in the Southeast particularly, superphosphate is in exceedingly tight supply position, and prices firm at higher levels than at the beginning of the season.

AMMONIUM NITRATE LIMESTONE: Demand continues excellent as the season progresses, and prices are currently $41.50 per ton bulk, and $45.50 per ton bagged, f.o.b. middle-Atlantic production point, and f.o.b. cars at Atlantic and Gulf ports.

SULPHATE OF AMMONIA: Price continues steady at previously announced levels, and demand is in good balance with supply.

NITRATE OF SODA: No change in price is noted from previously announced basis, and demand is in good seasonal volume.

GENERAL: In the Southeast, movement of fertilizers is in heavy volume, limited only by the supply of superphosphate, which is exceptionally tight at present. Other basic fertilizer raw materials with the exception of sulphuric acid and natural organic ammoniates are in ample supply, but a definite shortage of superphosphate is current in the Southeast.

Chemical Control Conference October 15

National Plant Food Institute is organizing a conference on chemical control problems, according to Vincent Sauchelli. This is scheduled for the Shoreham Hotel on October 15, which is during the AOAC meetings to be held at the same place, and falls on the day preceding the meeting of the Association of American Fertilizer Control Officials.

Nine billion dollars of federal tax revenue is tied up in surplus farm commodities. But the government stands to recover most of the invested funds in the years ahead.

* * *

Dr. Raymond H. Tremblay says: By 1972, the farmer will supply himself and 42 others, compared with 20 others now, and 10 others in 1940. As the 2 million key producers shrink in numbers, their investment will go up—possibly as high as $500,000 per farm.

Industry Meeting Calendar

DATE	EVENT	LOCATION	CITY
June 9-10	Southern Fert. Control Officials	Velda Rose Motel	Hot Springs, Ark.
June 9-11	Fert. Technology Demonstration	Muscle Shoals Labs	Sheffield, Ala.
June 14-17	National Plant Food Institute	Greenbrier Hotel	Wh. Sul. Sprgs., W. Va.
June 29-30	California Fertilizer Conference	University of California	Tacoma, Wash.
July 7-9	Pacific N.W. Fert. Conference	Winthrop Hotel	Davis, Calif.
June 27	Del-Mar-Va Fertilizer Assn.	Geo. Washington Hotel	Ocean City, Md.
July 15-17	Southwest Fertilizer Conference	Galvez Hotel	Galveston, Tex.
Aug. 18-22	Canadian Fertilizer Assn.	Bigwin Inn	Lake of Bays, Ont.
Sept. 24-25	Northeastern Fertilizer Conference	Biltmore Hotel	New York City
Sept. 30-Oct. 1	Southeastern Fertilizer Conference	Biltmore Hotel	Atlanta, Ga.
Oct. 14-16	Pacific N.W. Fertilizer Convention	Chinook Hotel	Yakima, Wash.
Oct. 15	Chemical Control Conference	Shoreham Hotel	Washington, D. C.
Oct. 15-16	Fertilizer Control Officials	Shoreham Hotel	Washington, D. C.
Nov. 4-6	Fertilizer Industry Round Table	Mayflower Hotel	Washington, D. C.
Nov. 9-11	California Fertilizer Association	Fairmont Hotel	San Francisco, Calif.

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Your investment in the latest Sackett Methods of producing conventional fertilizers is *guaranteed* to pay handsome returns. We are anxious to prove it.

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Step ahead of competition by entrusting your fertilizer expansion and modernization facility programs to our care. Many of the most forward-thinking fertilizer producers are glad they did.

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Sackett Equipment leads the field in Granular Production.
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Invest your dollars wisely by having Sackett build your new plant. We do the whole job . . . from the inception stage thru building construction and equipment fabrication to operating plant. See us for guaranteed results.

There is nothing that appeals to a man's reason more than plain facts. And, one plain fact is this . . . you can help yourself to bigger profits by resolving ***now*** to replace wasteful obsolete plant equipment with the latest rock-bottom cost methods as exemplified in Sackett Production Processes and Materials Handling Equipment. Why not start the ball rolling by writing or phoning us today?

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RESEARCH RESULTS AND REPORTS

"Phosphorus feeds clovers, while nitrogen feeds grasses, but a combination of nitrogen and phosphorus makes the best fertilizer application for pastures," according to Dr. W. E. Martin, Soils Expert for the University of California.

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Including a chelating agent in cotton field fertilizer programs can increase yields as well as hasten maturity, according to preliminary research reported by Dow Chemical.

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"In two cotton experiments conducted in the Chandler area in 1957 on a plant 4—skip 4 field, we observed some interesting effects. In general, the outside rows yielded one-fourth to one-third more than the inside rows.

"This may indicate that less nitrogen need be applied for the outside rows in a skip row planting, or that more total nitrogen is needed in a solid planting. This is to be expected since the outside rows have a larger soil area to explore for nitrogen and with less competition from other plants."—Dr. T. C. Tucker, Arizona AES.

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"Zinc is increasing in importance as a plant food for cotton in certain areas of California, Dr. R. H. Bassett, U. S. Cotton Field Station, Shafter, told the Western Cotton Production Conference.

* * *

"In spite of the great amount of information that has been obtained over the past few years and of the general recognition of the benefits of supplementing the plant nutrients which occur naturally in the soil, the question of what to apply, how much to apply, and when and how to apply in order to obtain the maximum return from the fertilizer investment is not always easy to answer for a given situation."—Dick Bassett, Dept. of Agronomy, Davis AES.

* * *

Forage production of most pastures can be increased by controlling weeds, says Dr. E. O. Burt, Florida AES. In pastures, weeds are often indicators of poor soil and poor management, says Dr. Burt. When enough lime and fertilizer are added to adequately drained soils, grasses and legumes tend to prevent weeds from becoming established. "There is no substitute for adequate lime and fertilizer and timely mowing," he adds.

Many successful dairy and beef farmers who fertilize heavily to extend the productive life of their forage stands may wonder why their grass yields sometimes drop after the first year or two of high nitrogen treatment.

Recent experiments in Maine may have some answers to this problem, as presented by the American Potash Institute, which reports that field experiments in new England indicate that high nitrogen usage for grass hay production increases the crop's demand for potash. And when this demand is not met, hay yields decline sharply.

* * *

Controlled plant growth resulting from filtering the sunlight that plants receive is seen as a possibility by Drs. H. O. Albrecht and C. E. Mandeville, Bartol Research Foundation, and Drs. W. C. Denison and L. C. Livingston, Swarthmore College. Since certain combinations of red and blue light reduce the photosynthesis-related afterglow (delayed re-emittance of light from plant cells), they believe that controlling the amount and wavelength of light source will regulate plant growth.

* * *

Mineral and water conservation are two major gains of new waste-disposal process invented by Drs. Harold B. Gotaas, dean of Northwestern University's Technological Institute, and William J. Oswald, University of California. Process consists of (1) treating sewage in commercial or industrial treatment ponds by methods developed by the Carnegie Institution of Washington and others, (2) growing algae in ponds to retrieve minerals taken from farm soil by food crops and contained in sewage, (3) after growing period is over, separating algae, humus, and water in settling chambers at ponds' exit ends. Algae are harvested, dried to granular form for use in animal feeds. Humus or sludge is used for adding body to soil. Water is used for irrigation, engine coolant, or after further treatment is channeled back into the community's water supply for household use. Nutrients in dried algae include protein, 45 to 55%; minerals, 15 to 20%; fat, 10 to 20%; and carbohydrates, 15 to 25%.

* * *

A method has been proposed for the production of chloride-free fertilizer. This consists of treating sylvinite with sulphuric acid at 80° C., cooling, drying, saturating with ammonia, treating with carbon dioxide, drying and granulating. (B.D. Melnik, Khim. Prom., 5, 330, 1957.) (Fertilizer & Feed Supplies Journal, 49, 9, 373, 1958)

* * *

If your corn yielded only 60 bushels per acre or less last summer without fertilizer, chances are good it will pay you to use extra plant food.

Curtis Overdahl and Lowell Hanson, extension soils specialists at the University of Minnesota, draw that conclusion from the 1958 X-Tra Corn Yield contest.

Of the 218 fields in the contest, 48 yielded under 60 bushels per acre. Adding fertilizer to these plots increased yields by 33.7 bushels. Return over fertilizer cost went up by $14.85 per acre.

* * *

Phosphorus fertilization makes the difference for profitable lettuce production, according to the California Fertilizer Association. Conclusive evidence of this fact has been demonstrated for several years by University of California scientists.

During a recent public field day at the University's Meloland Experiment Station, Dr. Oscar A. Lorenz, Vice Chairman of the Department of Vegetable Crops, stressed the need for proper fertilization and demonstrated the vast difference in size between lettuce that had received adequate phosphate fertilization at planting compared with no phosphate application. This notable size differential resulted in spite of the fact that both plots had received annual applications of 120 pounds to 180 pounds of phosphoric acid per acre for the past four years.

(Concluded on page 55)

PEOPLE in the Industry

Independent Manufacturing

L. Graham Campbell has joined **Independent Manufacturing Co.,** Philadelphia as salesmanager of the fertilizer department, it was announced by **Robert E. Smith,** general manager of the firm.

Mr. Campbell has served recently as executive v-p of **Bennett & Clayton,** Cranbury, N. J., and prior to that was production manager at the **Chamberlin & Barclay** plant at Cranbury.

Federal Chemical

Bill B. Mainord has joined the sales management team of **Federal Chemical Company** at Danville, Illinois, where he will assist **Roy Nethery,** division sales manager.

Mr. Mainord for the past ten years has been associated with the **Missouri Farm Bureau Federation.**

Ozark-Mahoning

Ralph E. Warren has been made sales representative in the Eastern Kansas and Missouri area for **Ozark-Mahoning Company,** Tulsa, Oklahoma, makers of Ozark Pelleted Soluble Fertilizers. Mr. Warren has had more than ten years of fertilizer experience in this same area.

Wheelabrator Corporation

Harold F. Schulte has been appointed chief engineer of **Wheelabrator Corp.,** Mishawaka, Inciana, manufacturers of dust and fume control equipment. With Wheelabrator since 1940, has been acting chief engineer since April 1958.

Raymond Bag

Howard Lundeen has been appointed quality control supervisor by **Raymond Bag Corporation;** he will be in charge of all quality control operations in the firm's plants at Middletown, Ohio and Richmond, Va.

Minnesota AES

Rodney A. Briggs, associate professor of agronomy at the **University of Minnesota,** has been named superintendent of the University's **West Central School and experiment station** at Morris.

His appointment was approved by the Board of Regents and he will take up duties at Morris July 1.

Mr. Briggs replaces the late **Allen W. Edson,** who died last September after being superintendent at the Morris station since 1947.

Sohio Chemical

George W. Cosper has been appointed to the position of manager of agricultural sales for the **Sohio Chemical Company** in Lima, Ohio, according to an announcement by **Henry J. Coleman,** sales manager for the company.

Cosper

Mr. Cosper has been assistant sales manager in agricultural sales for Sohio since joining the company in 1956. Prior to this time he had varied experience in sales and sales management functions in New York and Detroit.

Mr. Coleman stated that this appointment was in line with the Company's program for expansion following the announcement of the start of construction of the Sohio acrylonitrile plant at Lima, where the Company now produces ammonia, urea, and nitric acid.

Grand River Chemical

James A. Graves has been appointed sales representative for **Grand River Chemical Division** of **Deere & Company** in the New Mexico, Southern Colorado and West Texas region headquartering at Plainview, Texas, it was announced by **John R. Taylor, Jr.,** sales manager. Before joining Deere, Mr. Graves served for many years in the fertilizer industry in Texas.

Graves

Highway Equipment Company

C. F. "Stan" Stanton has been appointed as district representative for Highway Equipment Company, it was announced by Gale E. Allen, general sales manager. He will cover the states of Colorado, Kansas, western Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming, selling their lime and fertilizer spreaders and blenders.

Nitrogen Division

Thomas G. Runion has been employed by **Nitrogen Division, Allied Chemical Corp.,** as an agricultural sales representative in Illinois, headquartering at Macomb.

Runion

He joined Nitrogen Division upon graduation from Purdue University with a B.S. degree in agriculture.

India

Shri M. Lal has been announced as the new Controller of Fertilizers for the **Government of India** by **Sd/-K. C. Chetty** Deputy Secretary to the Government of India.

Olin Mathieson

Dr. Arthur M. Smith, nationally known authority on agricultural chemistry and fertilizers, has been named director of agricultural promotion and development for Mathieson urea.

Smith

A. B. Verdery, general manager for **Olin Mathieson's** northeastern district agricultural chemical sales, said Dr. Smith will concentrate chiefly on the area from Michigan east, and down the eastern seaboard.

As our readers know, Mathieson urea will be manufactured by the recently formed **SunOlin Company,** a jointly owned subsidiary of Olin Mathieson Chemical Corporation and **Sun Oil Company.** SunOlin is constructing a 73,000 ton-per-year urea plant at North Claymont, Del. to supply Olin Mathieson's requirements.

This will make Olin Mathieson a major supplier of urea in the eastern area. The plant will use the **Montecatini** process.

Before joining Olin Mathieson in 1948, Dr. Smith had been vice president and technical director of **Synthetic Nitrogen Products Corporation.**

Hudson Pulp & Paper

William F. Hazlewood has been appointed New York division manager for the Multiwall Bag Department, **Hudson Pulp & Paper Corp.**, according to an announcement by **B. C. Drumm**, sales manager. Mr. Hazlewood joined Hudson seven years ago in the industrial products department, and four years ago was transferred to the multiwall department, where he has been serving as district manager in New York.

Hazlewood

B. C. Drumm, sales manager of the multiwall bag department, **Hudson Pulp & Paper Corp.**, announces the appointment of **John F. Farley** as district manager for multiwalls in the Greater New York area.

Farley

Mr. Farley has had extensive multiwall experience. Prior to this new assignment he had been employed by Hudson as a specialist in the development and introduction of new bag types and constructions.

Singmaster & Breyer

Roman Chelminski has joined **Singmaster & Breyer**, New York metallurgical and chemical process engineers, as an associate. He had previously been a senior partner of **Knowles Associates** for 12 years.

French Potash

Garlan D. Glover has been named president of **French Potash & Import Co., Inc.** succeeding **Henry E. Lefevre** who is retiring, effective May 1. Mr. Glover has been vice president of the company since 1953.

The retiring president will remain in an advisory capacity with the company. He will remain as president of **Dominion Potash Limited** and a director of **Alwinsal Potash of Canada Limited.**

At the same time the company announced that **Michel Bernys** of Dominion Potash Limited joins the staff of French Potash & Import Co., Inc. May 1.

Central Farmers

Central Farmers Fertilizer Company has named **Bob Garn**, director of marketing. He will be in charge of all product movement and any technical service required in connection with products. Mr. Garn comes to Central Farmers from **Farm Bureau Cooperative Association** of Columbus, Ohio, where he had been manager of chemical processing for the fertilizer divisions.

Commercial Solvents

Maynard C. Wheeler has been elected president of **Commercial Solvents Corporation**, it was announced April 9 following a meeting of the board of directors. He joined them in 1923. At the same meeting, **William S. Leonhardt** was named financial vice president and treasurer, and **Jeremiah Milbank, Jr.**, was elected chairman of the board's executive committee. Mr. Wheeler succeeds **J. Albert Woods**, who is continuing his association with Commercial Solvents as a consultant.

Mr. Wheeler is also a director and vice president of **Northwest Nitro-Chemicals, Ltd.**, Canadian fertilizer manufacturing affiliate of Commercial Solvents. He holds the same positions with **Petroquimica de Mexico, S. A.**

Mr. Leonhardt has been treasurer of Commercial Solvents since 1957. He began his career with the Company twenty years ago. He also is a director of Petroquimica de Mexico.

Mr. Milbank has been a member of the board and executive committee since 1953.

R. Paul Jolley has joined the Agricultural Chemicals Department of Commercial Solvents Corporation as a sales representative, it was announced by **Clyde T. Marshall**, department manager. He will make his headquarters at CSC's District Office, 550 Glenn Street, SW, Atlanta, Georgia, from which he will service fertilizer manufacturers in central and southern Georgia.

Jolley

For the past four years Mr. Jolley served as chief fertilizer control official for the **Georgia Department of Agriculture** with the additional responsibility of director of personnel for this Department. Prior to this, he was a sales representative for the **Virginia-Carolina Chemical Corporation** from 1947-1955.

Paul M. Marshall, Jr. has been named to the expanding agricultural chemicals sales staff of Commercial Solvents Corporation, according to C. T. Marshall, sales manager for CSC's Agricultural Chemicals department. Mr. Marshall is assigned to the company's St. Louis district office, and his territory will include Missouri and Iowa; he will reside in Springfield, Missouri. Mr. Marshall has ten years of sales experience in the agricultural field.

Marshall

American Cyanamid

Eldon F. Loats has been appointed to the newly created post of resident manager in Hawaiian Islands for **American Cyanamid Company's** Agricultural Division, it was announced by **B. F. Bowman**, division marketing director.

Mr. Loats will be responsible for the sale and distribution of all products of the Agricultural Division sold in the islands. His heaquarters will be established on the island of Oahu.

The appointment of **Franklin Allen** as a district manager in the western region for **American Cyanamid Company's** agricultural division was announced by **B. F. Bowman**, division director of marketing.

Allen

Mr. Allen succeeds **H. H. Phillips**, who was promoted to the position of assistant regional manager.

During the twelve years he has been with Cyanamid, Mr. Allen has held several important sales and administrative posts both within the former Phosphates and Nitrogen division and the Agricultural division. He was formerly assistant district manager in the western region.

—CHANGES—

Nafco to Chase

Chase Bag Company announces the acquisition of **Nafco Bags,** Oakland, California, from **National Automotive Fibres, Inc.,** as of April 1st.

The present sales organization of Nafco Bags will continue as the Nafco Bags sales division of Chase Bag Company under **John W. Paulsen,** former manager of Nafco. The headquarters of the Nafco Bags sales division will be 503 Market Street, San Francisco.

Hooker in Bahamas, Mexico

Hooker Chemical Corporation, with headquarters at Niagara Falls, N. Y., has formed a Bahamian corporation, **Hooker Chemical International Limited,** for the purpose of engaging in chemical manufacturing and marketing activities in Latin American countries. The announcement is made by **Thomas E. Moffitt,** president of Hooker Chemical.

At the same time, Mr. Moffitt also announced the formation of a Mexican company, **Hooker Mexicana, S.A.,** organized primarily to manufacture and market phosphates in Mexico.

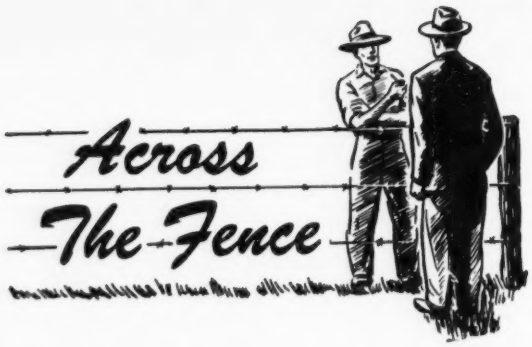
Bemis Engineering

Bemis Bro. Bag Company has announced plans for reorganization of its general engineering department. The change will include division of the engineering functions into three separate areas of responsibility: engraving and printing, general operations, and design and development.

To implement this program, four members of the general production department have been appointed to new positions. **C. V. Brady** has been appointed assistant to the director of production, **A. N. Weeks. B. R. Stetson** has been named chief of engraving and printing; **Lige Coakley** has been named chief of operations; and **R. J. Williams** will now be chief of design and development.

Fesco Moves

Fertilizer Equipment Sales Corp. moved May 1 to 6295 Pleasantdale Drive, Doraville, Ga. This is an Atlanta suburban industrial area. Their new phone number is Atlanta, GLendale 7-0286.



facts to help you sell

NPFI's Zenas H. Beers says that in addition to the crop potential wall charts already prepared and distributed for Illinois, Wisconsin, Minnesota, Kansas and South Dakota, now in process are those for Michigan and Ohio. By early next year it is planned to have charts and check lists for all the 13 states in the NPFI Midwest region.

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Fertilizer, 20¢ per Bushel. This is the punchline used by Alva Preston, U of Missouri extension soils specialist, in explaining why it pays to fertilize corn.

New Figures On Number Of Farms—The Crop Reporting Board has released a tabulation which shows, by States, the estimated number of farms in operation in 1958 as compared with 1957. The total number of farms in operation in 1958 is estimated at 4,749,000, 2 percent less than in 1957 and 18 percent fewer than were in operation 10 years earlier. Preliminary estimates of the Board indicate that about 4,645,000 farms will be in operation in 1959.

—of This and That . . . .

——Development of the modern corporation may "prove to be the greatest invention of them all" when the history of our era is written, Henry B. du Pont, a vice-president, director, and member of the Executive Committee of the Du Pont Company, said last month; the corporation "has proved the most effective device for extending technology which man has ever known," he said. Noting the slow rate of human progress over the centuries, he said the industrial organization as it is now recognized "came too late to aid earlier inventors" but declared, "In this century, it has changed the world."

He recounted the difficulties faced by earlier inventors, not only in getting backing for their ideas, but in actually creating their inventions. He said they often could only make a part-time job of it while they tried to make a living doing something else. "The modern industrial establishment is the agency which made the pursuit of technology a full-time job, and not for a few men, but for hundreds of thousands."

——Farmers are going to face a sharper income letdown than was expected last fall, according to Federal officials. In November it was said that net incomes would fall 5 to 10% below the prosperous '58 level . . . now it is thought the decline might be over 10%. Farmers may have to pay more for equipment in the months ahead, too, 'tho the recession helped hold many farm costs in line. The weather could be the deciding factor one way or the other. Good growing conditions might boost marketings and thus aid incomes. But the prospect of huge crops will only bring more price-support cuts, which in turn will depress earnings anyway.

——"Potential evidence is strong that further research on fertilizing Southern pine will bear fruit," said Dr. L. C. Walker, chief Forester for National Plant Food Institute, who spoke at a symposium on Forest Soils at Louisiana State University in Baton Rouge recently.

Dr. Walker went on to say, however, "that experimental evidence is insufficient for recommending fertilizer practices in southern forestry. What we need first, is a tabulation giving growth responses to be expected for each species in stands of various density and on many sites, when fertilized at specified ages, and at specified rates of application."

STATISTICAL TECHNIQUES IN CHEMICAL CONTROL WORK

by VINCENT SAUCHELLI
Chemical Technologist
National Plant Food Institute

"That lab must be wrong! I know we didn't change anything in the plant. That sample they used must be way out of line. We'll send them a repeat sample and see what they get."

Such comments about the chemical control laboratory are not rare. Production people have grave misgivings at times about the accuracy of the chemical analysis. The doubting plant man very frequently will send one or more repeat samples taken from either a reserve of the original batch or from a resampling of the lot. Then what happens? If the results on the second sample concur with the first the plant man unconvincedly accepts them; if the second analysis, unlike the first, shows the material is within specifications he feels reassured in his own judgment about the control "lab's" undependability.

We have already pointed out in this column that the control laboratory is not infallible; that it has serious problems which defy the supervisor's ingenuity to solve without the aid of statistical techniques. Variation is the major cause. Variability in materials, sampling techniques, laboratory equipment and personnel can frequently, in their totality, outweigh the variation in the process. Armed with statistical quality control procedures, the problem can be analyzed and errors corrected.

The statistician uses simple frequency distributions and control charts to demonstrate and control the accuracy and reproducibility of chemical and physical tests.

The supervisor of the plant's chemical control laboratory is expected to be familiar with the various major steps in production. He often participates with the operating man to establish the fertilizer formulations. These are set up so as to accord with a specified analysis within close limits: An upper limit reflecting management's costs; a lower limit set by the state fertilizer regulations.

The control chemist has to recognize that in producing a mixed fertilizer it is impossible to avoid variations and biases as pointed out in a previous paragraph. These major sources of variation in production are closely analagous to similar sources in the laboratory. This parallelism is shown in the following:

Laboratory	Process
Reagents	Raw Materials
Glassware and instruments	Equipment
Chemical analysts and technicians	Operators
Sampling	Sampling
New analytical procedures	New Operating methods

Although the chemist always tries to perform his function with a high degree of accuracy and reproducibility he often is faced with problems which he cannot solve by his routine procedures. This is where the modern techniques of statistical control can help.

Frequency distributions

The frequency distribution diagram is one of the tools used in studying the accuracy of a routine chemical or physical test. All statistical quality work has to do with measurements of one kind or another. The number of measurements may be large and unless they are organized, they could be very confusing and difficult to analyze to determine their significance. Statisticians tabulate the measurements in groups and note the number of frequencies that make up each group. Next they make a picture of the group data in the form of a graph which at a glance indicates the nature and extent of the observed variations in the measurements. In the majority of cases the grouped data follow a normal bell-shaped curve.

Two quantities are most helpful in this assemblage of data and comparison of two sets of data: (a) the number around which most of the data cluster called the mean; and (b) some number which represents the spread or dispersion of the data called the standard deviation or sigma. The mean is the arithmetic average, that is, the sum of the individual measurements divided by the number of such measurements. The standard deviation is defined as the square root of the mean of the squares of the deviations from the mean of the group.

Another measure of dispersion is the range which is measured by subtracting a smaller from a larger value. The range is used when the number of measurements is relatively small.

Standard deviation

Standard deviation is the most powerful method for calculating the measure of dispersion. As previously stated, it is not possible to make the identical fertilizer on a production scale from batch to batch or even continuously from day to day because there will be some variability due to the process and to errors in weighing, sampling and so on. If a large number of small errors are all affecting the process independently, any data from the process will be distributed in a manner that can be illustrated by a frequency curve. The most important of these curves is the normal bell-shaped curve. The importance of this curve lies in the fact that from two numbers, the mean and the standard deviation, we can establish the distribution of all the data. Standard deviation is usually taken as two or three sigmas. This means that if the process or chemical analysis gives results that fit a normal distribution curve, 95 percent of the distribution would lie within the two sigmas limit and there would be only a 5 percent chance of a result falling outside this range. The three sigma number would indicate that 99 percent lie within its limits and there is only 1 percent chance of results falling

outside the range. In other words any values falling outside the two sigma or three sigma limits can be attributed to some assignable cause and not to the laws of probability. The one sigma limit embraces 68 percent of the distribution.

Magruder Check Sample

Let us now briefly apply these concepts to the Magruder Check Fertilizer Sample report.

We use the standard deviation as the yardstick for judging whether a reported analysis should be considered a normal part of the large group of similar analyses or not. Limits of one sigma on each side of the mean or grand arithmetic average will include 68.3 percent of the results reported by the laboratories.

Limits two sigmas away from the grand average will include an additional 27.1 percent of the results or a total of 95.4 percent.

If we want to include the results from practically all the subscribing laboratories the limits will have to be extended to three sigmas away from the grand average or a total of 99.7 percent of the results.

If a result deviates considerably from the grand average it indicates there is a bias or assignable cause. If a laboratory reports more than once a result approaching the three sigmas limit, it is safe to infer that the biased results are not due to chance but to assignable causes in the laboratory and should lead the supervisor to study his laboratory techniques for the source of bias.

An average result which deviates significantly from the grand average range indicates that the laboratory should improve its precision or reproducibility first instead of looking for bias.

References: The reader is referred to numerous text books on the subject if he wants to study statistical techniques. We can refer him to several texts at his request.

TVA

DEMONSTRATES FERTILIZER PROCESSES AT MUSCLE SHOALS, JUNE 9-11

The Tennessee Valley Authority will hold another of its pilot-plant demonstrations this year to acquaint the fertilizer industry with the agency's recent developments in fertilizer production technology. The demonstration will be held on June 9, 10, and 11 at the Muscle Shoals laboratories near Sheffield, Alabama.

As in the 1957 demonstration, which was attended by about 400 representatives of the fertilizer industry from 34 states, Hawaii, Puerto Rico and 4 foreign countries, the program will consist of a series of pilot-plant runs preceded by short discussion periods. The subjects to be discussed and illustrated include the production of liquid fertilizers, the granulation of high-nitrogen and no-nitrogen grades, and some factors affecting loss of nitrogen during granulation. A general resume of TVA's fertilizer research and development program also will be presented. Tours will be arranged for those who wish to see the fertilizer manufacturing facilities and the chemical and agronomic research laboratories.

All members of the fertilizer industry, the press, and other interested persons are invited to attend the demonstration. Those planning to do so are requested to notify J. H. Walthall, Director of Chemical Development, Tennessee Valley Authority, Wilson Dam, Alabama.

The meetings will begin with registration in the lobby of the Chemical Engineering Building between 9:00 and 10:00 a.m. on June 9. The main subject of the day will be the loss of nitrogen in the production of high-analysis granular fertilizers. A discussion of the causes and methods of controlling nitrogen loss will be followed by a demonstration of the production of a 12-12-12 grade fertilizer in the pilot-plant continuous ammoniator.

On the morning of June 10 the results of pilot-plant tests of the production of high-nitrogen grades will be presented. The use of TVA produced 30-10-0 fertilizer in formulating a 20-10-10 grade will be demonstrated in the pilot plant. During the afternoon the subject will be the granulation of no-nitrogen (P-K) grades ranging from 0-14-14 to 0-30-30. The pilot plant will be operated to produce a 0-25-25 grade using the phosphoric acid-phosphate rock reaction to supply heat for granulation.

The program on June 11 will be devoted to a liquid fertilizer conference. Talks will be given on the technology of manufacturing liquid mixed fertilizers, the agronomic value of liquids, and application equipment. Several TVA developments in the liquid fertilizer field will be described and demonstrated, including the use of superphosphoric acid and wet-process phosphoric acid in manufacture of the liquids.

TVA

REORGANIZES FERTILIZER RESEARCH AND DEVELOPMENT ACTIVITIES

Reorganization of TVA's fertilizer research and development activities was announced last month by J. H. Walthall, director of the division of chemical development.

The division, which is a part of TVA's Office of Chemical Engineering, conducts research in chemistry and engineering to develop processes for the production of new and improved fertilizers and materials for national defense. The primary purpose of the reorganization is to place more emphasis on the development of processes and to increase the output of advanced technology to aid the fertilizer industry and agriculture. Under the reorganization the work of the division will be handled by a Fundamental Research Branch, an Applied Research Branch, a Process Engineering Branch, and a Design Branch.

The Fundamental Research Branch, headed by Dr. Kelly L. Elmore, conducts long-range chemical research studies of problems relating to the behavior of fertilizers in soils, conducts fundamental research to discover new chemical knowledge about fertilizer products and processes, and renders various research services.

The Applied Research Branch, headed by Travis P. Hignett, is composed of both research chemists and chemical engineers. This branch conducts chemical and small-scale engineering research to define, develop, evaluate new and improved

fertilizer processes and promote their commercial use.

The Process Engineering Branch, headed by Alvin B. Phillips, designs and operates pilot plants directed toward the completion of the development of processes and to obtain data for the design of demonstration—and large-scale plants and to produce new fertilizers in sufficient quantities for field tests of their effectiveness. This branch also provides technical supervision for the initial operation of TVA demonstration-scale plants.

In addition, the position of staff chemical engineer was established. The staff chemical engineer, M. M. Striplin, Jr., will advise the Manager of Chemical Engineering and the Director of Chemical Development on chemical engineering problems and will assist in promoting the adoption of successful TVA developments.

The Design Branch of the division, headed by James Cox, is unaffected by the reorganization.

Solutions Use Rising, Association Points Out

Nitrogen solutions for direct application have increased 29% for the year ending June 30, 1958 as compared with the previous years usage as recently reported by the United States Department of Agriculture. This gain in nitrogen solutions usage from 245,878 tons to 317,000 tons is most significant when compared with total fertilizer tonage which dropped 1.5% during this same period.

These gains, as pointed out by the National Fertilizer Solutions Association, are in line with rapid increases in nitrogen solution usage during the past few years. This trend along with the expected increase of corn and cotton acreages due to removal of acreage restrictions point to an even greater increase during the coming year.

Greatest tonnage increases occurred in the North Central Regions. The West North Central Region (Missouri, Iowa, Kansas, Nebraska, North Dakota, South Dakota and Minnesota) increased from 50,374 tons to 82,000 tons. An increase of 63%. The East North Central Region (Ohio, Michigan, Indiana, Illinois and Wisconsin) showed an increase of 55% from 38,147 tons to 59,000 tons.

This 12 state area consumed 141,000 tons of nitrogen solutions or 44.5% of the total United States tonnage of nitrogen solutions for direct application. The increase of 52,500 tons in this area accounted for 73.8% of total United States increase of nitrogen solutions usage.

The South Atlantic area still leads in tonnage of nitrogen solutions used. Increase here was from 75,941 to 83,000 tons, or 9%.

The Pacific Region (Washington, Oregon, and California) increased their usage from the sizeable tonnage of 45,816 to 47,000 tons. An increase of 3%. The West South central Region (Arkansas, Oklahoma, Louisiana, and Texas) increased from 17,688 tons to 25,000 tons. An increase of 41%. Sizeable percentage increases were shown in the remaining four regions—New England, Middle Atlantic, East South Central, and Mountain. These increases, however, were not as great tonnage wise as in the North Central, South Central and Pacific Areas. Of particular significance is the increased sales in all regions of the United States.

The National Fertilizer Solutions Association points out that the tonnage of nitrogen solutions sold for direct application has progressed from a position of relative unimportance 5 years ago to one of the top 4 sources of nitrogen materials in 1958.

New Biplane Shows Agricultural Role

A new biplane, the Grumman Ag-Cat, designed specifically for agricultural use as a crop-duster and-sprayer, demonstrated its capabilities last month at the aircraft firm's Calverton, Long Island facility. The demonstration was conducted jointly by Grumman and Nitrogen Division of Allied Chemical Corporation, manufacturers of the chemical fertilizer employed in the successfully completed test operation.

The new plane, which has a wide variety of modern features incorporated into its design, was developed as an "archaic-looking" biplane to provide a maximum wing area, or lift surface, with a minimum wing span—a combination which permits making a continuous turn at slow dusting speeds, at maximum gross weight.

Specifications for the airplane include a gross weight of 3750 pounds, an empty weight of 2179 pounds, and a 29 cubic foot (217 gal.) hopper volume. Stall speed is 42 mph; at maximum gross weights, take-off distance is 676 feet.

New Molybdenum Fertilizer Additive Developed

A new fertilizer additive, specially designed for treating perennial crops with molybdenum, has been developed by Climax Molybdenum Company, a division of American Metal Climax, Inc. According to William M. Stilwell, manager of agricultural sales and development, the new product offers important economies and performance advantages over other molybdenum top dressing materials.

Known as Moly-Gro Fertilizer Additive, the new material will be marketed primarily to commercial fertilizer producers for blending with their products. It was developed as a companion to the recently introduced Moly-Gro seed treatment formulation and is recommended for use on already established legume perennials that are growing on molybdenum responsive soil. The seed compound, on the other hand, is most effective for annuals and establishment of all new crops.

Moly-Gro Fertilizer Additive contains a minimum of 42% active molybdenum as compared to only 38.5% in sodium molybdate, until now the most widely used molybdenum compound for top dressing. Says Mr. Stilwell: "This provides substantial savings when treating large acreage—about 9/10ths of a pound will do the same job as a full pound of sodium molybdate."

The new product is relatively insoluble in water yet is completely available to plants. As a result, it provides a constant rate of uptake—supplies molybdenum to the plant evenly between fertilizer applications. This represents another of its advantages over sodium molybdate which has a higher rate of solubility, hence in heavy rain becomes available to crops too suddenly, and is more susceptible to leaching.

Produced in a convenient particle size for blending with other materials, Moly-Gro Fertilizer Additive is marketed directly by Climax. It is available in 50 and 100 pound drums.

Beer Out Fertilizer In

From Iowa we note the delivery of a glass-lined former beer tank which will now be used for fertilizer storage—liquid, obviously. Seems these are pressure-type tanks, and are coming out of a brewery being dismantled in Davenport.

INTERNATIONAL'S
FULL ORBIT
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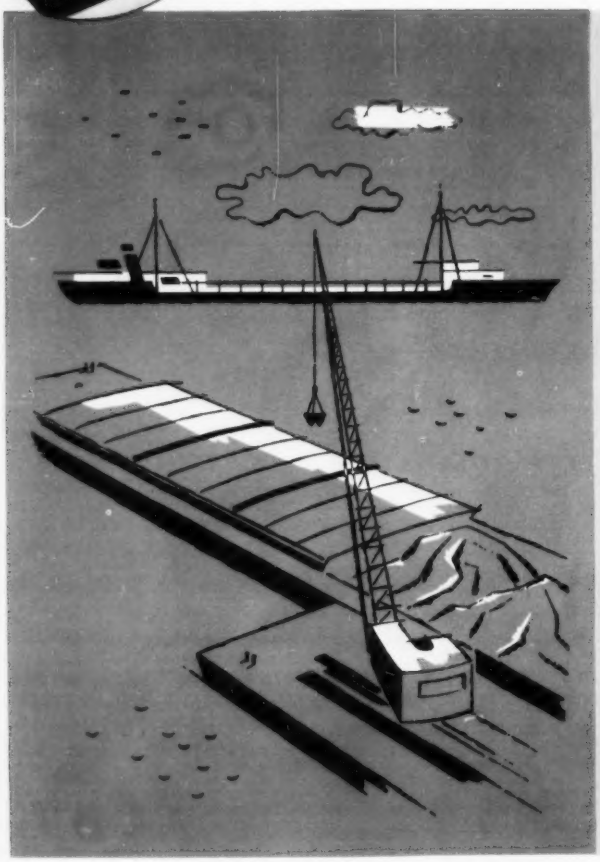
How IMC's Triple Super Contract gives you TRIPLE VALUE SERVICE

and extra dollars in your pocket

International services triple the value of



IMC transportation service masters the maze of shipping problems for you

Let's face it: delivery can give you skull-busting headaches . . . unless you're protected by International Minerals' General Transportation Service. IMC helps you choose lowest cost methods — ship, barge, rail. IMC offers other advantages, like on-site storage at key transportation centers and rolling warehouse shipments. We can help you with rate negotiations, routing or interpretations of shipping regulations. In short, International Minerals takes the trouble out of triple super shipping.

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Technical trouble-shooting in the fertilizer business takes experience and personnel. And International Minerals has both — a staff of technicians that stands ready when you need them . . . to help cut your in-plant production problems down to size. Let us help you in formulation . . . choosing equipment . . . designing plant layouts . . . streamlining materials handling . . . or in applying research information. Call on IMC for complete trouble-shooting service that works for you *at no cost to you!*

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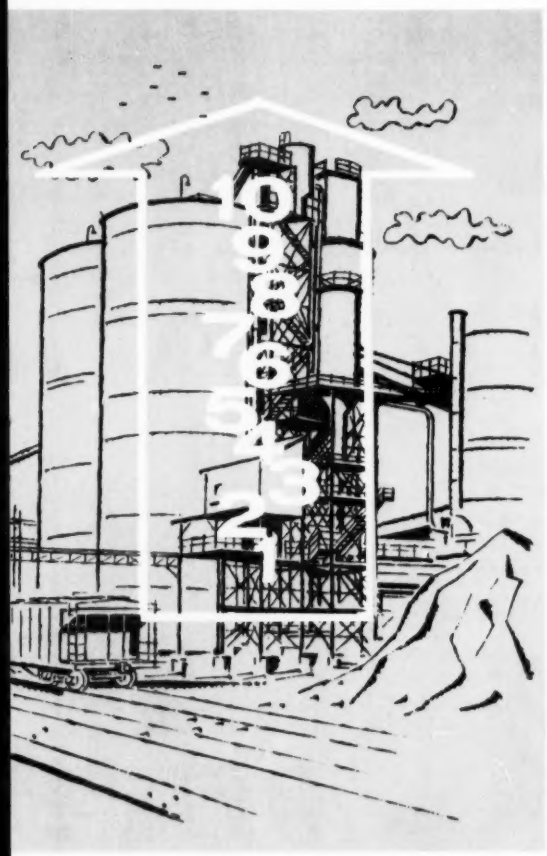
your phosphorus contract...



FULL ORBIT SERVICE . . . IDEAS AND PLANS TO BUILD VOLUME, PRODUCE MORE PROFIT OVER COSTS!

International Minerals' Full Orbit Service is helping fertilizer manufacturers chart new profit strategy.

It's an exciting and *proved* program that sets new standards of service in the industry. First benefit is IMC's extremely high quality triple superphosphate. Then comes Full Orbit technical help in ironing out your in-plant problems . . . plus help in a host of ways to eliminate your transportation troubles.

Full Orbit Service makes the most of buyer-supplier teamwork to help you solve marketing problems . . . get the most from your sales manpower . . . make sales meetings pay off . . . and get real results from your promotion dollars through professionally planned use of newspapers, radio and TV.

The best part is, International's Full Orbit Service doesn't cost you a cent. Contact your International representative now. There's no obligation. Find out — as many other fertilizer manufacturers have — how IMC's Triple Superphosphate and Full Orbit Service can help you realize extra profits while you benefit from a smoother working operation.

From mine to manufacturer, International's quality count-down adds up to superior product control

Nobody guards triple super quality as carefully as International Minerals. Over 40 separate tests are used! More than 400 chemical analyses are made daily. IMC absolutely controls triple quality with a countdown that follows the product from raw material to shipment of the finished product. And as a final quality check, every shipment of International Triple Superphosphate has its own certificate of analysis — mailed to you before material arrives at your plant. Depend on IMC for quality.

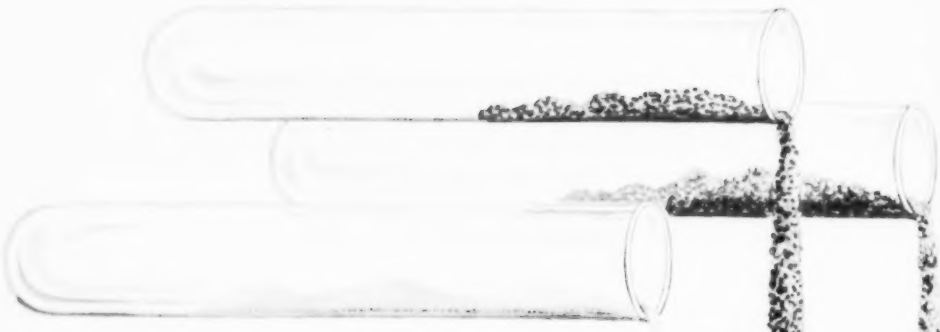
MINERALS International CHEMICALS

Producers of Living Minerals

COARSE — International's coarse-textured Triple gives you the same excellent ammoniation batch after batch . . . promotes desirable agglomeration.

GRANULAR—International's granular Triple is non-crumbling, free-flowing, easy to apply—makes this product ideal for direct application.

RUN-OF-PILE—International's even-textured Triple provides uniform particle size, even density and high porosity that lets you ammoniate at higher rates, temperatures.



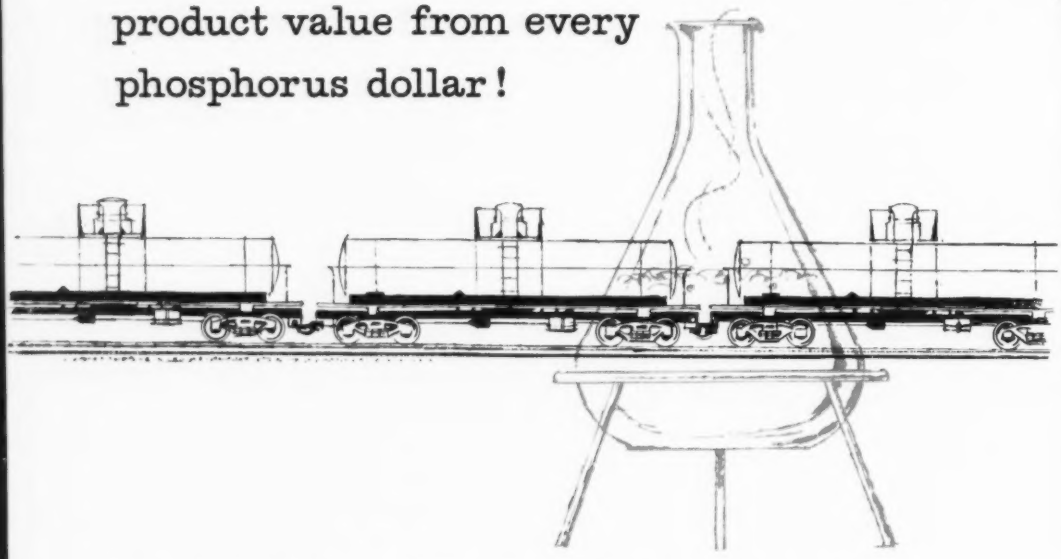
TRIPLE SUPERPHOSPHATE

Available P_2O_5 (min. guarantee) — 46.0%

Particle size:

	R.O.P.	GRANULAR	COARSE
6 mesh	98-100%	97% min.	97% min.
65 mesh	22-34%	0.5% max.	4% max.

An International contract helps you get full product value from every phosphorus dollar!



IMC TRIPLE SUPERPHOSPHATES AND PHOSPHATIC FERTILIZER SOLUTION SOLVE FORMULATION PROBLEMS

Now you can make International your dependable single source of all high-analysis phosphate ingredients. Benefit from International's three grades of top-quality triple superphosphate plus high purity 53%-55% phosphatic fertilizer solution. Get all the quality advantages International's processing adds to your product. Be sure with International.

Producers of Living Minerals

MINERALS International CHEMICALS

SPECIAL PRODUCTS DEPT., PHOSPHATE DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois

the Fertilizer Situation for 1958-59

a report of the Agricultural Chemicals Staff
HAROLD H. SHEPARD, *in charge*
JOHN N. MAHAN, *fertilizer specialist*
CHARLOTTE A. GRAHAM, *administrative assistant*
Commodity Stabilization Service
Food and Materials Requirements Division
U.S. Department of Agriculture

Fertilizer supplies for the 1959 season will be limited not by the industry's productive capacity but by the quantity the trade will accept. Shortages may occur locally at the height of the spring season because of transportation bottlenecks and overloaded handling facilities but these will be temporary. Considerable optimism has been expressed by the fertilizer industry that spring movement will be greater than in 1957-58, possibly even greater than indicated in this report. These estimates of 1958-59 supplies are projections based on available data (largely limited to the first 6 months of the fertilizer year) for inventories, rates of production and foreign trade. (See "The Fertilizer Situation for 1957-58" for a discussion of the basis for these projections, and the appendix to the present report for references to current fertilizer data.)

Domestic supplies of nitrogen (N), phosphate (P_2O_5) and potash (K_2O) materials for 1958-59[1] are expected to total 7,300,000 tons, over 8 percent more than in 1957-58.

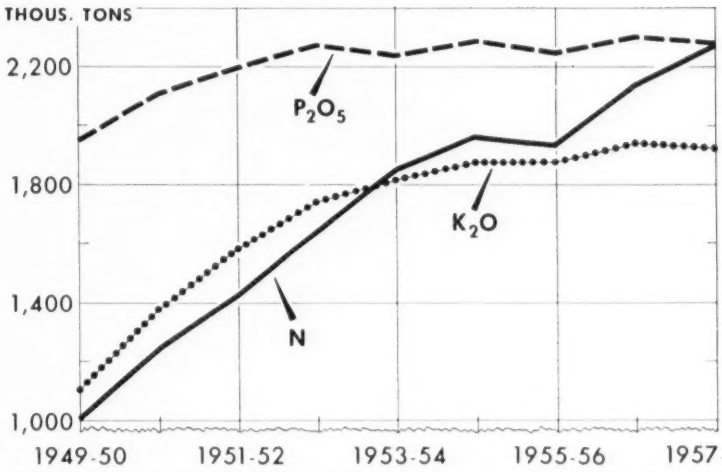
Advances in the industry and changing fertilization practices on farms are causing shifts in types and forms of fertilizer materials for both mixed fertilizer manufacture and direct application. Changes in the kinds of materials containing N and P_2O_5 are reflected in the composition of 1958-59 supplies.

Nitrogen

The domestic nitrogen supply estimated for fertilizer purposes is 2,602,000 tons of N in 1958-59 (table 1, page 44). This is 6.7 percent more than in 1957-58.

Sizeable quantities of solid fertilizer-grade ammonium nitrate apparently are going into markets other than the fertilizer trade. Data contained in this report have been adjusted to include only ammonium nitrate for fertilizer purposes.

Liquid nitrogen supplies are expected to be even larger than in 1957-58 when they comprised over half the domestic supply of fertilizer nitrogen.



(Source: Fertilizer Investigations Research Branch, ARS-USDA, Beltsville, Md.; 1957-58 Preliminary.)

Figure 1.—Plant Nutrient Consumption—United States and Territories

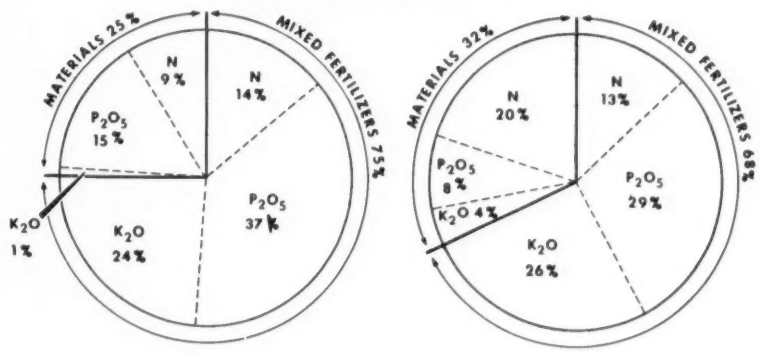
Anhydrous ammonia plants operated at about 82 percent of capacity in 1957[2]. Estimated capacity January 1, 1958 was 4,750,000 tons of NH_3[3], and about 175,000 tons came on stream during 1958. Plant expansions and new constructions are scheduled to bring in an additional 263,000 tons during 1959.

Urea capacity was 623,100 tons on January 1, 1958[4] and may total 913,000 tons of urea with the completion of plants under construction.

Phosphate

The net domestic supply of phosphatic materials for fertilizer purposes in 1958-59 is expected to total 2,539,000 tons of P_2O_5 (table 2, page 44). This is 136,000 tons (5.7 percent) more than was available in 1957-58. Supplies of normal, enriched and concentrated superphosphates from domestic producers probably will be lower. Ammonium phosphate shipped as such by primary producers will remain near the level of last year. Captive use by

Figure 2.—Mixed Fertilizers Contain A Smaller Percentage of Total Plant Nutrients Consumed



(Source: Fertilizer Investigations Research Branch, ARS-USDA, Beltsville, Md.)

[1] The fertilizer year is from July 1 through June 30.

[2] Chemical and Rubber Industry Report, BDSA, U.S. Department of Commerce, November 1958, page 5.

[3] Chemical and Engineering News, September 1, 1958, page 105.

[4] Chemical and Rubber Industry Report, BDSA, U.S. Department of Commerce, April 1958, page 21.

Table 1.—NITROGEN: estimated supply of nitrogen for fertilizer purposes, 1957-58 and 1958-59, United States and possessions

(1,000 short tons of N)

Item	1957-58*	1958-59
Supply from domestic sources		
Solids:		
Ammonium nitrate	367	357
Ammonium sulfate	366	325
Urea	84	100
All other solids	205	223
Total solids	1,022	1,005
Liquids:		
Ammonia (including aqua)	739	780
All other	599	669
Total liquids	1,338	1,449
Total (solids and liquids)	**2,360**	**2,454**
Imports		
Ammonium nitrate	71	70
Ammonium sulfate	41	48
Urea	23	19
Ammonium nitrate-limestone mixtures	26	27
Soduim nitrate	78	80
All other	66	65
Total	**305**	**309**
Exports		
Ammonium nitrate	38	22
Ammonium sulfate	109	58
Urea	21	25
All other	59	56
Total	**227**	**161**
NET DOMESTIC SUPPLY	**2,438**	**2,602**

* Revised

Table 2.—PHOSPHATE: estimated supply of P_2O_5 for fertilizer purposes, 1957-58 and 1958-59, United States and possessions

(1,000 short tons of available P_2O_5)

Item	1957-58[1]	1958-59
Supply from domestic sources		
Normal and enriched superphosphates	1,327	1,270
Concentrated superphosphate	844	831
Ammonium phosphate[2]	168	176
All other[3]	251	443
Total	**2,590**	**2,720**
Imports		
Ammonium phosphate	45	30
All other	14	23
Total	**59**	**53**
Exports		
Normal superphosphate	49	39
Concentrated superphosphate	163	178
Ammonium phosphate	14	11
All other	20	6
Total	**246**	**234**
NET DOMESTIC SUPPLY	**2,403**	**2,539**

[1] Revised.
[2] Liquid and solid ammonium phosphate shipped as such by primary producers.
[3] Includes ammonium phosphate (produced in combination with potash salts to make mixed fertilizers), nitric phosphates, sodium phosphate, wet base goods, calcium metaphosphate, natural organics, phosphate rock and colloidal phosphate, basic slag, and estimates of wet and furnace phosphoric acid for liquid and solid mixed fertilizers and direct application.

Table 3.—POTASH: estimated supply of K_2O for fertilizer purposes, 1957-58 and 1958-59, United States and possessions

(1,000 short tons of K_2O)

Item	1957-58[1]	1958-59
Supply from domestic sources		
Potassium chloride	1,808	2,076
Potassium sulfate[2]	117	127
All other	20	20
Total	**1,945**	**2,223**
Imports		
Potassium chloride	169	173
Potassium sulfate[2]	30	30
All other	14	21
Total	**213**	**224**
Exports		
Potassium chloride	222	267
Potassium sulfate	14	15
All other	16	6
Total	**252**	**288**
NET DOMESTIC SUPPLY	**1,906**	**2,159**

[1] Revised.
[2] Includes sulfate of potash-magnesia.

producers for mixed fertilizer manufacture is expected to increase.

Technological progress has made possible the use of relatively pure phosphoric acid in the manufacture of liquid mixed fertilizers and high-analysis solid mixed fertilizers as well as for direct application. Wet-process phosphoric acid was utilized in the fertilizer industry until recently almost exclusively for the manufacture of concentrated superphosphate and ammonium phosphate,—largely captive uses. Impurities in the acid made it difficult to use in other fertilizer production or to transport. Lately producers have been offering clarified wet-process acid which appears to be gaining some acceptance particularly by manufacturers of solid mixed fertilizers and for direct application. Because of this development, the 1958-59 supplies of phosphatic materials may deviate from estimates based on past trends more than anticipated.

Phosphoric acid (both furnace and clarified wet-process) for liquid fertilizer mixtures, high-analysis solid mixed fertilizers, and direct application is believed to have supplied nearly 90,000 tons of P_2O_5 in 1957-58. The rate of production during the first half of 1958-59 indicates for the full year availability of over 200,000 tons which may be used for these purposes.

Two plants came on stream in 1958 primarily for production of ammonium phosphate but with built-in ability to make other carriers of P_2O_5 demanded by the industry. Another ammonium phosphate plant is expected on stream this spring.

It has been estimated that phosphoric acid (H_3PO_4) capacity will reach 2,100,000 tons of P_2O_5 during 1959[5]. Production in 1957 was almost 80 percent of estimated capacity with about 60 percent being wet-process acid.

Potash

The net domestic supply of K_2O for fertilizers during 1958-59 is estimated to be 2,159,000 tons, 13.3 percent over the previous year (table 3, page 44).

Both domestic deliveries and exports of potash during the first half of the year exceeded those of the same period in 1957-58. Several factors influenced the rate of movement. Seasonal price discounts

[5] Chemical and Rubber Industry Report, BDSA, U.S. Department of Commerce, November 1958, page 5.

made it difficult to judge to what extent the increased movement will continue during the remainder of the year. Graduated price discounts were in effect during the first six months, changing bi-monthly for potassium chloride and quarterly for potassium sulfate. Deliveries in each month just prior to the bi-monthly discount for potassium chloride were about twice the movement in the previous month. The slight increase in imports may have resulted from price reductions and the desire of foreign producers to retain their share of the market. Imminent production in Canada is also a disturbing factor.

The 1957-58 supply of potash appears to have been supplemented by larger than normal stocks at the beginning of the year.

Use of nitrogen grows most rapidly

In 1949-50 plant nutrient consumption was 4,061,000 tons. Of this quantity nitrogen amounted to only 1,005,000 tons, while P_2O_5 consumption was 1,951,000 tons and K_2O 1,105,000 tons. By 1957-58 use of nitrogen had more than doubled to be almost equal to P_2O_5, an increase of 1,259,000 tons while P_2O_5 had increased only 329,000 tons (figure 1, page 43). During the same period consumption of K_2O had risen 816,000 tons to a total of 1,921,000 tons. The $N:P_2O_5:K_2O$ ratio of 1.0:2.0:1.1 in 1949-50 shifted to 2.0:2.0:1.7 in 1957-58.

Direct application climbs

Mixed fertilizers contained 75 percent of the total plant nutrients purchased by U. S. farmers in 1946-47, the remainder being unmixed materials for direct application (figure 2, page 43). The proportion of straight materials has been rising markedly, reaching 32 percent by 1956-57, at the same time that total plant nutrient usage increased almost 3,000,000 tons. In 1946-47 about 58.7 percent of the plant nutrient content of materials for direct application was P_2O_5 whereas in 1956-57 P_2O_5 had fallen to 23.9 and N had risen to 63.5 percent.

APPENDIX

REFERENCES TO CURRENT FERTILIZER DATA

Nitrogen production

1. Facts for Industry, Inorganic Chemicals, Series M28A, Bureau of the Census, U.S. Department of Commerce.
2. Facts for Industry, Organic Chemicals and Plastics Materials (urea), Series 6-2-168 (a monthly report); and Synthetic Organic Chemicals—United States Production and Sales (an annual report), Chemical Division, U.S. Tariff Commission.
3. Coke and Coal Chemicals (monthly coke reports), Mineral Industry Surveys, Bureau of Mines, U.S. Department of the Interior.

Phosphate production

1. Facts for Industry, Superphosphate and other Phosphatic Fertilizers, Series M28D, Bureau of the Census, U.S. Department of Commerce.
2. Facts for Industry, Inorganic Chemicals (phosphoric acid), Series M28A, Bureau of the Census, U.S. Department of Commerce.
3. Phosphate Rock, Mineral Market Reports, Mineral Industry Surveys, Bureau of Mines, U.S. Department of the Interior.

Potash production

1. Potash, Mineral Market Reports, Mineral Industry Surveys, Bureau of Mines, U.S. Department of the Interior.
2. Press releases, American Potash Institute, Inc., 1102 Sixteenth Street, N. W., Washington 6, D. C.

Foreign trade

1. U.S. Imports of Merchandise for Consumption, Report No. FT 110.
2. U.S. Exports of Domestic and Foreign Merchandise, Report No. FT 410; both FT 110 and FT 410 are reports of the Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce.

Fertilizer consumption

1. Annual fertilizer consumption reports, Fertilizer Investigations Research Branch, Soil and Water Conservation Research Division, ARS-USDA, Beltsville, Maryland.

Safety Exec Committee Meets at Roanoke June 4

The Fertilizer Section, National Safety Council, will hold an Executive Committee meeting at Hotel Roanoke, Roanoke, Va., on June 4. One of the functions of this committee is to organize, standardize, and present five regional safety schools for supervisors in the fertilizer industry. Plans are also to be presented for participation in the 47th National Safety Congress and Exposition, which will be held in Chicago in October.

The Council announced that John Nahikian has been assigned as Fertilizer Section staff representative.

Texas Co. Changes Name

The Texas Company changed its name to Texaco, Inc., May 1.

Southern Control Meet in Hot Springs, June 9-10

Under the chairmanship of President Bruce Cloaninger, the 17th annual convention of the Assn. of Southern Feed and Fertilizer Control Officials will be held at Hot Springs, Ark., in the Velda Rose Motel. Among the fertilizer speakers are:

NPFI's Dr. R. L. Beacher; NAC's J. A. Noone. The value of consumption statistics will be presented by Woody N. Miley, Arkansas AES. Fertilizer industry developments effect on regulatory programs will be the subject of Arthur Gentry, Arkansas Plant Food Co.; Dr. D. A. Hinkle on the Arkansas Soil Testing Program; Fertilizer-insecticide mixtures, by Grover Dowell.

Another Booklet by Bankers

An attractive 20-page brochure entitled, "Putting Profits into Colorado Farming and Ranching," has been published by the Colorado Bankers Association in cooperation with Colorado State University. The booklet was prepared and printed for the Bankers Association by the National Plant Food Institute.

Liberally illlustrated and crammed with information about fertilizer economics, the booklet is designed to show how and why the wise use of commercial fertilizer in conjunction with other practices recommended by Colorado State University can increase farm profits.

Bemis Announces New Plastic Bag Plant

Bemis Bro. Bag Co. has announced that a new plastic bag plant with facilities for the extrusion of polyethylene liners and the manufacture of plain and printed polyethylene bags is under construction at Union City, south of Oakland, Calif.

The company stated that construction of the 30,000 sq. ft. plant will make possible even better service to western industry on polyethylene bags and liners. The plant will produce a wide range of polyethylene bags, including such patented products as Bemis Fine-Weld Bags and Flip-Close Bags.

James White, superintendent of the Bemis Plastic Package Plant at Terre Haute, Ind., will serve as production manager of the new plant, which will begin operation about June 30, 1959. R. K. Wimer, West Coast plastic bag specialist, has been appointed sales service manager.

Spuds Johnson says: Survival in the agriculture of tomorrow will hinge largely upon the individual farmer's ability as a manager and whether he has enough of the right kind of credit.

The International Scene

World Use Up 5% Is FAO Forecast

According to a bulky report just in from The Food and Agriculture Organization, the world use of fertilizer, instead of levelling off, as had been anticipated, is once more on the way up. As our readers know, the FAO annually reports on fertilizer use by nations, and projects a forecast from these figures. The 1959 estimate is for a 5% increase in plant food consumption, according to their "Review of World Production and Consumption of Fertilizers."

According to the United States group's report, the percentage gain in world use of all fertilizers in the 1956-57 year was 11 per cent, or nearly three times as much as the 4 per cent increase, for the preceding 12 months.

In the 1957-58 year, however, the rate of increase slowed to 3 per cent, but is bounding back in the current fertilizer year to a "strictly conservative" estimate of 5 per cent.

The report estimates percentage increases in world use of fertilizer for the three years from mid-1956 to mid-1959 as follows: Nitrogen, 24 per cent; phosphoric acid, 17 per cent; potash, 20 per cent; all fertilizers, 20 per cent.

World production of fertilizer also is reported to have increased 3 per cent in the 1958 year and to be showing a sharper gain in the 1959 year in line with the rising consumption.

Some of the highlights of the United Nations group's report include:

Europe and North America still produce, and consume, between 80 per cent and 90 per cent of total world supplies of fertilizers.

While supplies of fertilizer nitrogen, phosphoric acid and potash all are tending to increase at an accelerating rate, only in nitrogen is an equally strong uptrend in demand continuing.

The tendency seems to be for a larger proportion of nitrogen and phosphoric acid supplies to be in the form of complex fertilizers at the expense of ammonium sulfate and ordinary superphosphate.

Erection of new fertilizer plants and enlargement of existing ones have been reported in "Around the Map" from many countries, and the indications are that increased demands will be more than adequately covered by increased production, at least for the next few years, and that many countries will rely less on imports—and more on their own domestic production.

The survey notes that construction of new nitrogen plants, or enlargement of existing ones, is reported as in progress or planned in 20 countries (Western Europe, 5; North and Central America 5; South America 2; Asia, excluding mainland China, 7; Africa, 1). The report also cites indication that "very considerable increases in fertilizer production are taking place in mainland China."

INDIA

Heading for 2 Million Annual Tons

The Deputy Minister of Commerce is quoted in India as having said that by the end of 1961 that nation will be producing 2,000,000 annual tons of nitrogenous fertilizer.

(Concluded on page 49)

International Scene...

JORDAN

Exports Phosphate Rock

Because they have no facilities for conversion into superphosphate, almost all of the phosphate rock mined there is exported. The production last year reached 294,000 metric tons, as compared with 208,000 in 1956 and 262,000 tons in 1957. Marketing difficulties have caused 88,000 tons to back up into stock at the mines and at ports.

KOREA

Imports Fertilizer Tonnage

$29,000,000 of 1958-59 ICA aid money has enabled the Office of Supply to import in the last six weeks 409,000 tons of fertilizer and materials, partly from the USA. Some is shipped direct to the interior, some held at the port for processing into mixed fertilizer.

SOUTH AUSTRALIA

10-Year Plan Completed

In South Australia are 250,000 acres of what once was known as "The 90-mile Desert." Ten years of a plan undertaken by the Australian Mutual Provident Society and the South Australian Government in conjunction with the Australian Federal Government have transformed this dreary wasteland into flourishing pastoral properties.

Trace elements applied to the soil, as the result of research into plant foods such as copper, zinc and superphosphate, did the trick. The research was carried out by men of the Commonwealth Scientific and Industrial Research Organization. On the area there now are 150 farms, carrying a total of 500,000 sheep and cattle.

Scott H&W Division Announces Non-Skid Paper

A new type of anti-skid paper which gives maximum protection against slippage of multiwall bags during transit or storage is announced by the Hollingsworth & Whitney Division of Scott Paper Company.

When used for the exterior ply of multiwall bags, the new H&W "Gripper-Kraft" stock provides a gripping surface proved far more tenacious than rough finish kraft or other conventional non-slip coated papers.

The new stock is the product of a unique manufacturing process, developed by Hollingsworth & Whitney. In this process, the surface of the regular finish H&W multiwall paper is treated with a special anti-skid chemical right on the paper-making machines, a radical departure from previously-used methods.

Why settle for less than 100 bushels of corn per acre? It costs just as much to plow, plant, cultivate and harvest 30 bushels as it does to grow 100.

obituaries

John T. Money, 79, former NFA traffice counsel, died at his Washington D. C. home April 6.

O. E. Zacharias Jr., 59, general manager of Southern States Cooperative since 1948, died April 7 in a Richmond, Va. hospital.

Rudolph Martens, 67, with Stadler Fertilizer, Cleveland, for the past 20 years, died April 16 at his home of a heart attack just before he was leaving for a trip to New York, to join his wife and daughter on a visit there.

SUPPLIERS TELL US ABOUT EQUIPMENT

Solutions Application Marker

General Metals is offering a new marking device for fertilizer solutions applicators. The new Dye Marker avoids skips and over-laps, save time and solutions, get more customer satisfaction when top-dressing small grain and pastures.

The Dye Marker is simple in operation, inexpensive first cost, affords minimum maintenance, easy adapted to tractor or trailer frame, and is easy to install on all applicators with metering pumps. The unit is offered as supplemental equipment on the complete line of General Metals applicators.

To get further information and prices, circle Number 1 on CF's Information Service card, page 51.

Self-Unloading Transport

A new Dorsey Bulkmaster self-unloading bulk transport for handling of dry materials is now in production; designated Bulkmaster model FB-T, it unloads fertilizer, lime, salt, feed, seed, coke, sulphur and many other dry granular commodities.

Extremely versatile, the unit pit dumps, or can be equipped with a 14-foot folding or rigid full-swiveling 18"-wide endless-belt elevator. A boom and cable assembly swivels the elevator around to lie flat against the body when not in use. A tandem hydraulic pump, powered by a 25-hp air-cooled gasoline engine, supplies steady pressure to operate

the rubber belt conveyor, which is riveted to a 36" heavy-duty steel conveyor chain, and elevators. The system discharges in excess of one ton per minute, depending on the type of material.

A wide range of options including elevators, water-proof steel top with loading hatches and side extensions for increased capacity are available.

For full particulars, circle Number 2 on CF's Information Service Card, page 51.

Ori-Flowrator Meter

Spec. Sheet 10B1700 issued by Fischer & Porter Co. describes F&P Ori-Flowrator Meter, a kinetic manometer type flowmeter that measures by-pass flow as a function of main line flow across a set of orifice taps. For free copy, circle Number 3 on CF's Information Service card, page 51.

Pneumatic Conveying System

A new technical booklet describing a compact pneumatic conveying system for car, truck or bin unloading has been announced by Sprout, Waldron & Co. The complete package unit combines negative and positive pressure systems and is designed especially for small and medium size bulk materials handling requirements.

Bulletin 211 illustrates and describes each component of the compact system, and includes a schematic drawing of a typical system for unloading freight cars and conveying material to bulk bins.

Basic information on the recently announced portable system designed specifically for in-plant transfer of granular free-flowing materials is given. For a free copy, circle Number 4 on CF's Information Service card, page 51.

Industrial Nozzle Catalog

The Industrial Nozzle Division of Wm. Steinen Manufacturing Co. has announced publication of a new catalog covering their complete line of industrial spray nozzles. The catalog contains 32 pages of complete listings and data on all types of nozzles for industrial spraying applications. Specific data on spray angles, dimensions, types of connections, and capacity vs. pressure for all standard nozzles are presented in simplified time-saving selection tables.

For your free copy circle Number 5 on CF's Information Service card, page 51.

Odor-masking Brochure

A new brochure, 'A to Z Odor Masks' is offered by Dodge & Olcott, describing their second series of complete odor-masking compounds. The booklet contains information on properties, applications and types, with prices. It also offers trial sizes of odor masking materials, with specifications. For a free copy of the booklet, circle Number 6 on CF's Information Service card, page 51.

Checkweighing Scales Bulletin

Four page bulletin illustrates various types of Thayer automatic checkweighing scales. Specifications, operational diagrams, conveyor actions and detector devices are given. Thayer principle of operation is discussed at engineering level.

For a free copy, circle Number 7 on CF's Information Service Card, page 51.

High-Speed Fork Lift

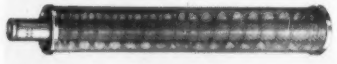
A new, fast-rolling 4000-lb. wheel mounted fork lift is now being shown by Utility Sales Division, J. I. Case Co. New Model 310 Utility Fork Lift with 10½', 14¼', or 21½' mast, offers exceptional mobility for outdoor, or in-and-out handling of palletized, unitized, or bulky materials.

Model 310 lifts 4000 lbs. to 15', 2500 lbs. to 21½': Top 18 mph speed cuts round-trip time on long-cycle work. High operator cockpit and low dashboard give exceptional visibility for easy maneuvering and fork operation.

For full information, circle Number 8 on CF's Information Service card, page 51.

New Suction Strainer

Spraying Systems Co. has introduced the new 8060 Suction Strainer for use on spray rigs. This new large capacity strainer provides a 75% greater open screen area than previous high capacity suction strainers. It is designed for spray rig applications where a large vol-



ume of liquid per minute is to be sprayed or where the spray rig user wishes to reduce possibility of clogging as well as pressure loss through the strainer to an absolute minimum.

For complete information circle Number 9 on CF's Information Service card, page 51.

Equipment News . . .

Heavy Duty Air Vibrator

The new Navco HCP line of heavy-duty air vibrators for unloading covered railroad hopper cars has just been announced by National Air Vibrator Company. The line is designed with an exceptionally long piston stroke for maximum amplitude and thrust, and the piston is the only moving part. Units have stainless steel mounting head for long life—use no body assembly bolts to wear out or fatigue.

The manufacturer states that they are being used successfully on bulk trailers carrying potash, and similar materials. Two models are available. The 3" piston size is 14¼" long, weighs 68 lbs. and consumes 18 c.f.m. at a recommended air pressure of 40-60 P.S.I. The 4" piston size is 17½" long, weighs 115 lbs., and consumes 29 c.f.m. at a recommended air pressure of 40-60 P.S.I. A hydraulic clamp assembly is also available for attaching to cars not equipped with standard dove tail brackets.

For full details circle Number 10 on CF's Information Service Card, page 51.

Flow Rate Transmitter

A new bulletin #170 now ready for distribution describes in building-block style the unusual design features of the Brooks MPT motion position transmitter.

Copies are available by circling Number 11 on CF's Information Service card, page 51.

Sweat Absorbers

Two models of sweat absorbers for increasing worker efficiency are now available from Mine Safety Appliances Company. One is the 'Coolband,' which is held in place on the wearer's forehead by an elastic band and does not interfere with glasses or goggles. The second, the 'Cool-Ur-Hat,' is designed for use with safety hats, welding helmets, and face shields. A non-metallic (plastic) fastener folds over the head band of the hat and snaps in place to keep the sponge absorber in a fixed position.

Both sweat absorbers are made of soft, light, highly absorbent cellulose sponge which clings without binding. Evaporation from the exposed surface aids in cooling the head. Designed for indefinite use, the bands can be kept clean and sanitary by squeezing in soapy water or any mild germicidal solution.

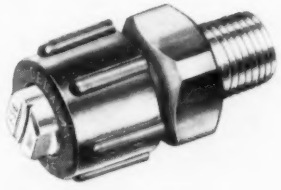
Bulletin 0408-16 is available on request from Mine Safety Appliances Company by circling Number 12 on CF's Information Service Card, page 51.

New Plastic Nozzle

Delavan Manufacturing Company has introduced a new nylon nozzle for use in agricultural sprayers.

The basic advantage of this nylon nozzle lies in its outstanding ability to withstand the corrosive effects of liquid fertilizer solutions. The available nylon parts consist of the nozzle cap, nozzle body, and nozzle strainer. The tip can be furnished in brass, aluminum or stainless steel.

Complete details on the new Delavan Nozzle may be obtained by circling Number 13 on CF's Information Service card, page 51.



Corrosion Resistant Coatings

New Bulletin No. 259 charts protective coatings for steel, concrete and wood where corrosive spillage, fumes and atmospheres are involved and for tank linings. Text shows type and details of a wide range of protective coatings from Wisconsin Protective Coating Corp. for corrosive conditions and lists technical bulletins covering specific applications.

For a free copy, circle Number 14 on CF's Information Service Card, page 51.

PVC-lined Pipe Fittings

A complete line of Plastisol (PVC) lined pipe fittings in malleable iron or aluminum has been announced by Victaulic Company of America. Like Victaulic fittings in other materials, the new Plastisol lined fittings are supplied with grooved ends, for quick-jointing pipe with Victaulic mechanical couplings.

The new fittings are available in elbows, tees, reducing tees, reducers, caps and adapter nipples in sizes from 1¼-inch through 12-inch diameters. All fittings are designed with full flow radii.

Full information is available by circling Number 15 on CF's Information Service card, page 51.

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TEAR OFF ALONG DOTTED LINE

5-59

COMMERCIAL FERTILIZER *Information Service Bureau*
Please send me additional information on item numbers circled below:

1	4	7	10	13	16	19	22	25	28	31	34
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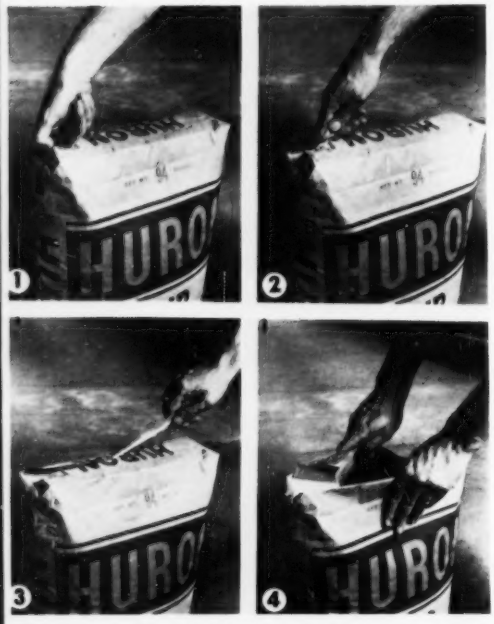
Equipment News . . .

Bag Tear Strip

Industrial users who package their products in pasted valve, Diamond "0" type multiwall bags will be interested in a new development just announced by Union Bag-Camp Paper Corporation. It is a tape tear strip which, as illustrated, opens the



top of the bag quickly and easily and also creates a handy pouring spout.

Called 'Unistrip,' it consists of a flat 5/32" wide tape held in place in the valve of the bag by a quick-drying adhesive. The length of the strip has been standardized at six inches. It can, however, be furnished in lengths up to ten inches at additional cost.

For full details, circle Number 16 on CF's Information Service Card, page 51.

Remote Weight Recording

The latest accomplishments in the field of transmitting and processing of weight data are described in a new colorful eight-page Toledo Scale brochure. It is pointed out how these new Toledo units bridge the gap between the accurate indication on the dial and the use of the weight data at accounting control points by automatic weight data transmission.

For complete information on the latest Toledo remote weight recording advances, request Form 2975a by circling Number 17 on CF's Information Service card, page 51.

Controlled Volume Drum Pump

Chemicals and other liquids can now be added to a solution automatically and in constant concentration with the new "Enpo" Controlled Volume Drum Pump manufactured by Piqua Machine and Manufacturing Company, Piqua, Ohio.

This measuring pump is specifically designed for chemical and processing operations where a liquid must be pumped into a mixing vat in an exact proportion. The "Enpo" Drum Pump operates automatically or manually and can be regulated for intermittent or continuous duty. The predetermined rate of flow can be controlled by changing cams in the pump.

More information about the "Enpo" Controlled Volume Drum Pump is available by circling Number 18 on CF's Information Service card, page 51.

Vapor-proof Emergency Suit

The Unico Model 75/20 vapor-proof emergency suit was designed and developed especially for use where acid and vapor protection is required, and can be used with any type of self-contained breathing apparatus. The suit offers complete coverage protection, and is priced at $235.

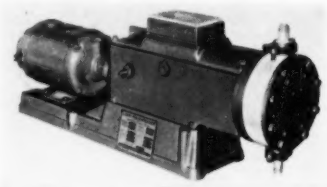
For complete data, circle Number 19 on CF's Information Service card, page 51.

Hose Coupling Bulletin

A new eight page bulletin in color has just been announced by Hose Accessories Co. 'Le-Hi' condensed catalog No. 34 contains essential information on their wide variety of hose couplings and fittings for every type of industrial rubber hose. For your copy, circle Number 20 on CF's Information Service card, page 51.

Teflon Reagent Head

The addition of a Teflon reagent head for use on its standard Pulsafeeder, a controlled volume dia-



phragm pump, designed as a handler of corrosive liquids, has been announced by the Process Equipment Division of Lapp Insulator Co. The Teflon diaphragm protects the pump's working parts.

Since the Teflon reagent head assembly is the only part to come in contact with corrosive fluid, the possibility of metallic ion contamination is eliminated. Liquid is drawn into the suction check valve of the head and then discharged through the outlet valve by a hydraulically actuated diaphragm. This diaphragm is used to transfer any corrosive fluid continuously or intermittently in accurately controlled amounts.

For further information on the Teflon head or other new reagent heads made of PVC, Kel-F, Penton, Polyethelyne or Karbate, circle Number 21 on CF's Information Service card, page 51.

Under-Over Weight Indicator

A panel-mounted meter that indicates weighing deviations in terms of dial scale divisions is described in a Technical Reference Bulletin offered by the Richardson Scale Co.

Bulletin 58B describes the meter, designed to be used with the Richardson "Select-O-Weigh" automatic proportioning system to provide a visual indication of the number of graduations of an "off weight" for each ingredient weighed by the system.

For a copy of Bulletin 58B, circle Number 22 on CF's Information Service card, page 51.

Flowmeter Catalog Available

New 6 page Catalog 10D1416 gives complete information on Fischer & Porter obstructionless magnetic flowmeter for metering difficult liquids. Principles of operation and advantages of the new meter, which will handle flows from a fraction of a gallon per minute to many millions of gallons per day, are discussed. For free copy, circle Number 23 on CF's Information Service card, page 51.

Dust Mask Folder

A new folder describing their flexible plastic dust mask is being offered by Flexo Products. The 'Flex-A-Foam' features a washable latex filter claimed to remove non-toxic dust particles 100 times smaller than the eye can see. For a free copy of the folder, circle Number 24 on CF's Information Service card, page 51.

Filling Scale Bulletin

Four page bulletin illustrates ten main types of Thayer autcmatic filling scales. Capabilities of each is discussed. Specifications of all scales and operational diagrams of three types of feeder actions are given.

For your copy of bulletin, circle Number 25 on CF's Information Service card, page 51.

Acid Tank Repair Plate

Leaking lined acid tanks can now be repaired in minutes in position with the new Camac Repair Plate, covered with ⅛" thick semi-hard rubber and then a ¼" soft rubber gasket is vulcanized on the tank side of the plate. Repair plate comes with studs, nuts and back up plate.

Catalog sheet with complete information is available by circling Number 26 on CF's Information Service card, page 51.

New Dust Collector Filter

Aget Manufacturing Company offers a new Dustkop Filterkop, developed for industrial operations where the volume of air to be handled is unusually high. Used in conjunction with standard vented Dustkops, the Filterkop receives all the air collected by these units, recovers nearly 100% of the dust load, dissipates harmful fumes, and recirculates air that has been thoroughly cleaned.

The basic unit of the Filterkop consists of heavy gauge steel housing, a hopper, 80 cloth filter tubes, and a shaker mechanism. Accumulated dust is automatically shaken from the tubes into the hopper at the end of each fan operation.

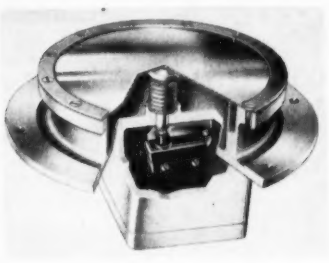
For further details, circle Number 27 on CF's Information Service card, page 51.

Bin Level Indicator

A new, automatic bin level indicator, especially suited to applications where corrosion and chemical action may be factors, is being introduced by The Bin-Dicator Company, Detroit.

The controlled movement of the spring-loaded stainless steel diaphragm and the sensitivity of the switch mechanism make the Auto-Bin-Dicator extremely responsive to changes in pressure of materials, and it functions as effectively in controlling levels of light, low density materials as it does when handling heavy, dense, coarse or abrasive materials.

The unit is simple in design, ruggedly built, easily installed and low in cost. Literature is available by circling Number 28 on CF's Information Service card, page 51.



Acid-Resistant Bag Closure

Bemis Bro. Bag Co. has been granted U. S. Patent No. 2,855,881 for an acid-resistant bag closure sewn with thread manufactured in a combination of plies of synthetic plastic materials, such as nylon or Dacron, and of cellulose fibers such as rayon or cotton. In this instance, the word "closure" means stitching or seaming the top, sides or bottom of a bag.

After tests in its laboratories and others, Bemis recommends such patented bag closures be sewn with thread composed of Dacron and cotton plies. Thread of this composition is produced in the company's cotton mill at Bemiston, Ala.

To encourage wide application of its patented bag closure, Bemis has adopted an automatic method of licensing users under its patent when they purchase Bemis Golden-Ply Acid-Resistant Thread. The price of the thread as now established contains a small royalty and each cone of thread bears the following statement: "The purchaser is licensed under U. S. Patent No. 2,855,881 for this purchase only and the price paid includes the license fee."

For the convenience of the chemical and fertilizer industries in which the patented bag closure is expected to have wide use, the Bemis company, when its thread with automatic license is not employed, has adopted the policy of being willing to issue licenses under Patent No. 2,855,881 to bag closers, bag manufacturers and thread manufacturers.

Information about Bemis Golden-Ply Acid-Resistant Thread or about licenses may be obtained by circling Number 29 on CF's Information Service card, page 51.

Chain Drag Conveyor

Development of a new type self cleaning chain drag conveyor has been announced by Sprout, Waldron & Co. In the new design, materials are conveyed by means of drag blades mounted on specially hardened roller chains, moving continuously over a smooth steel slide. A built-in return circuit prevents overloading and eliminates the danger of choke-up. For a bulletin on this, circle Number 30 on CF's Information Service card, page 51.

Sprinkler Solution Unit

The Waterfeeder, model 100, disperses fertilizer in liquid, granulated, cartridge or tablet form with the sprinkling operation. The speed of application is readily controlled by a valve on top. The Waterfeeder may be attached to either end of the hose to facilitate use. Full information on this new device from Proen Products Co. is available by circling number 31 on CF's Information Service card, page 51.

Iso-Kinetic Sampler Available

A new Iso-Kinetic Dust Sampler designed to measure dust particles discharged from dust control equipment and to determine equipment operating efficiency has been announced by The Day Company. This equipment has been used for years in conducting field tests to deter-

Equipment News . . .

mine dust conditions in plant dust control systems. It is now available to companies who wish to conduct their own dust control measurements.

For complete facts and detailed information circle Number 32 on CF's Information Service Card, page 51.

Continuous Analysis Brochure

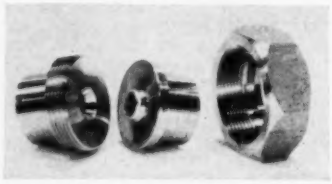
New 8-page brochure, available from Technicon Controls, Inc., describes the AutoAnalyzer, an automated system for continuous chemical analysis, that can analyze trace materials down to parts per billion, continuously record results with an accuracy of 1%.

It shows how the compact system automates analytical procedures in the laboratory and controls product quality in the plant. Principles of operation and the system's new concept, that automates each step of manual analysis and eliminates absolute measurements, are detailed.

Copies are available by circling Number 33 on CF's Information Service card, page 51.

Stainless Pipe Unions

A new line of corrosion resistant high pressure pipe unions with a wholly confined Teflon seal has been developed by The Special Screw Products Company. The new unions, rated from 2,000 to 6,000 psi are designed for use where extreme



pressures or corrosive conditions prevail.

These unions are made with threaded or socket-weld ends from Carpenter 304 or Carpenter 316 stainless steel, made for nominal pipe sizes of ⅛" through 2".

For full details, circle Number 34 on CF's Information Service Card, page 51.

Centrifugal Exhaust Blowers

A new complete line of centrifugal blowers is announced by Young Machinery Co. in a 4-page bulletin and check list, available to insure proper selection of the desired blower to meet the specific application.

Blowers can be furnished in carbon steel, stainless or other alloys. They are hi-pressure, low volume units used as industrial exhausters and installed in pneumatic conveying systems.

For Bulletin F-1158-33, circle Number 35 on CF's Information Service card, page 51.

Hopper Car Vibrator

A trackside, permanent-mount vibration inducer for accelerated, push-button unloading of hopper-bottom railroad cars, entrain or singly, is announced by the Martin Engineering Company.

The new hopper car shaker moves —and keeps moving—all types of bulk materials from railroad cars, even those subject to extreme "in-transit" packing and bridging.

For additional information, circle Number 36 on CF's Information Service card, page 51.

RR&R

(Continued from page 30)

State Agriculture Commissioner L. Y. Ballentine says North Carolina farmers are losing millions of dollars by failing to properly lime their soils. "They can do something about the serious problem of acid or sour soils."

He pointed out soil tests show four million tons of lime are needed on North Carolina crop land to bring the soil to the proper alkaline level.

Yet during the fiscal year 1957-58 only 360,000 tons of agricultural liming material were sold in the state —less than 10 per cent of the amount needed.

* * *

Illinois agronomists say there are still 10 million acres in the state that need lime. They estimate that it takes about 2.5 million tons of lime each year to replace lime materials removed by crops and lost by leaching. Illinois farmers apply less than 4 million tons annually.

Nationwide, the liming picture is even worse. It's estimated that we need to use about 80.5 million tons of lime annually. Three years ago our liming rate was only 20.5 million tons annually, barely a fourth of what was needed.

* * *

Dr. D. J. Hoff, agronomist at the Ohio AES has devised a system of estimating available manganese.

Dr. Hoff's technique is called phosphate extraction. A 10-gram sample of soil is shaken in with 100 milliliters of phosphoric acid or ammonium dihydrogen phosphate. Analyzing the filtered liquid gives a measure of the amount of manganese that is available to the soybean plants.

* * *

University of Idaho agricultural experiments showed that sulphur fertilizing materials increased the protein content of alfalfa and peas and increased yields of both alfalfa and winter wheat.

* * *

"Push button" corn growing has been developed at the Univ. of Arizona . . . is turning out 7' high stalks in 70 days. The new scheme was proved successful on the University's experimental farm, where researchers planted a 4½ acre plot under a giant polyethylene tent. By controlling heat, light and humidity, the corn was knee high long before the 4th of July.

Meetings & Associations

CFA Conference June 29-30

Dr. Daniel G. Aldrich, dean, College of Agriculture, University of California of Berkeley and Davis, will be the featured speaker following the banquet at El Rancho Hotel, West Sacramento, to be held in connection with the seventh annual California Fertilizer Conference. The Soil Improvement Committee, California Fertilizer Association, is sponsor of this annual event. Dr. Aldrich will speak on "California's Changing Agricultural Pattern". Co-chairmen of the Conference will be J. H. Nelson and Earl R. Mog, both of Stockton.

This conference is expected to attract about 300 persons representative of farmers; technicians of the University of California, the State Colleges, the USDA and testing laboratories, etc.; field representatives of canners, sugar beet refiners and cotton ginners; and sales, technical and management people of the fertilizer industry.

The program will embrace two important areas of fertilizer use in California—tree fruit and vine nutrition, and fertilizer placement. The assembled audience will hear addresses on these two subjects by well qualified persons during the morning session on June 29. On the morning of the 30th, the audience will be divided into two groups for informal panel discussion of these subjects, with the panels rotating between the audiences.

The afternoon of the 29th will be devoted to a conducted tour of fertilizer research plots and greenhouse tests on the campus. The annual banquet will be held in the Rodeo Room, El Rancho Hotel, West Sacramento, at 6:30 on the evening of June 29.

Mr. Nelson and Mr. Mog said there will be no registration fee, and they invite the attendance of all persons interested in any phase of soil fertility and plant nutrition. Further information and printed programs are available at the office of the California Fertilizer Association at 475 Huntington Drive, San Marino, California.

CFA Dinner With State College Committee

The Soil Improvement committee of the California Fertilizer Association recently held a joint dinner meeting, with the newly established State College Fertilizer Committee as its guests, on the campus of California State Polytechnic College, San Luis Obispo.

Represented on the College committee were the two campuses of California State Polytechnic College, at San Luis Obispo and Pomona; Fresno State College; and Chico State College. Millard E. McCollam, Western Manager, American Potash Institute, San Jose, and Chairman of the Association's Soil Improvement Committee, presided.

CFA Elects Four to Board

Demont W. Galbraith of Woodland, California, was recently elected vice president of the California Fertilizer Association, to fill out the term of M. M. Stockman, San Francisco, resigned. At the same time, L. M. Roberts, San Francisco, was elected to serve out Mr. Stockman's term on the board of directors, and John Parker, Fresno, was elected to the board to replace Frank A. Easton, Fresno, deceased.

Mr. Galbraith is president of Agriform of Northern California, Inc., Mr. Roberts is general manager of the Ammonia division, Shell Chemical Corporation. Mr. Parker is manager of Fresno Agricultural Chemicals Company.

Mr. Stockman resigned as vice president and from the board of directors on March 31, 1959, when his concern, The Mountain Copper Company, Ltd., ended its operations in commercial fertilizers.

Howard H. Hawkins, Golden State Plant Food Company, Glendora, continues as president of the California Fertilizer Association. Other officers are James F. Sloan, J. F. Sloan Company, Salinas, secretary; Fred R. Bryant, Brown and Bryant, Shafter, treasurer; and Sidney H. Bierly, general manager, San Marino.

Pacific N.W. Conference Set for July 7-9

Plans are practically complete for the regional fertilizer conference of Pacific Northwest Plant Food Association. It will be held July 7-9 at the Hotel Winthrop, Tacoma, Wash.

The first day will include a field trip in the afternoon to the Western Washington AES. The 8th will be devoted to a speaking program, followed by a cocktail hour and a banquet that evening. The conference will end at noon on the 9th, and the committee suggests your reservations be made accordingly. The hotel expects one week in advance a payment for your first night, otherwise they will not hold the room.

New Members on Soil Committee

The Soil Improvement Committee of Pacific Northwest required three additional members. There were fifteen nominations, from which the board chose: Glen Holt, U. S. Borax, Portland; Roy Lipps, US Steel, Salt Lake City and Doug Jamieson, Cominco Products, Spokane.

Del-Mar-Va. Meets June 27 at Ocean City

The Del-Mar-Va Peninsula Fertilizer Association announces its annual convention to be held June 27, 1959 at Ocean City, Md. The meeting will take place Saturday morning at the Hotel George Washington. Guest speaker will be Dr. Ralph L. Wehunt of the University of Georgia.

Illinois Fertilizer Industry Conference

The University of Illinois department of agronomy has scheduled its annual Fertilizer Manufacturers Industry Conference on June 29-30 on the campus at Urbana.

S. R. Aldrich, extension agronomist reports the program will include a review of current research on fertilizers, fertilizer recommendations, and a discussion of the Illinois Fertilizer Law. The conference will also include a one-half day tour of the Agronomy Research Farm and other nearby soil fertility research.

The conference is designed primarily for fertilizer manufacturers and their sales representatives. Meetings for local fertilizer dealers are planned for this fall.

CLASSIFIED ADVERTISING

RATES: single issue, 8c per word; two issues, 12c per word; three issues, 15c per word: add 4c per word for each insertion beyond three issues. 'For Sale', 'Exchange' and 'Wanted' advertisements accepted for this column must be **paid in advance.**

HELP WANTED

PRODUCTION SUPERVISOR

Production Supervisor for new granular fertilizer plant in Ohio. Experience in front line supervision of granulation, shipping and some plant maintenance helpful. Permanent salaried position with well-established, medium-sized company offering group insurance, pension plan and other benefits. Box #12, % Commercial Fertilizer, 75 Third St. N. W., Atlanta 8, Ga.

SUPERVISOR for wet process phosphoric acid and pelleted fertilizer plant. California location. Degree not necessary. Salary commensurate with experience. Our employees have been advised. Answer Box #13, % Commercial Fertilizer, 75 Third St., N. W., Atlanta 8, Ga.

POSITION WANTED

AGRONOMIST, M. S., Age 35, single, extensive experience in domestic, foreign and tropical agricultural field. Desires responsible position with progressive concern. International technical liaison, sales position preferred. Address Box # 11, % Commercial Fertilizer, 75 - 3rd St., N. W. Atlanta 8, Ga.

PLANT FOR SALE

FOR SALE: Controlling stock in progressive fertilizer company producing up to twenty thousand tons annually. Modern equipment, including granulating. In best farming section of Midwest with minimum competition. Nearby sources of raw materials. Reason for selling: retirement. Write Box 15, % Commercial Fertilizer, 75 Third St., N.W., Atlanta 8, Ga.

EQUIPMENT FOR SALE

FOR SALE—1 New Stedman Type BX 20 x 18 Hammermill equipped with 4 row rotor with ⅞" manganese hammers and complete with 220V reduced voltage type compensator. Mill direct connected to 20 HP, 1200 RPM, 220/440 Volt, 3 Phase, 60 Cycle Totally Enclosed Fan Cooled Motor. Mill and motor mounted on integral base. Box # 20, % Commercial Fertilizer, 75 - 3rd St., N. W. Atlanta 8, Georgia.

FOR SALE: 900 - 32" x 48" hardwood pallets, loaded twice, 5-4" top boards, 3 runners, 2-4" bottom boards, Long screw nails used. Box 9, % Commercial Fertilizer, 75 - 3rd St., N. W. Atlanta 8, Georgia.

EQUIPMENT FOR SALE: 1 St. Regis Valve Bag Filling Machine Model 301 P B X Serial 6875, 5 inch Spout. Extras Include:—1 Feeder Belt; 1 V Type Bag Rest (80-100 lb.); 1 V Type Bag Rest (25-50 lb.); 1 Flat Bag Rest; 1 Safety Switch for Wheel Cover. Practically new. Box # 4, Commercial Fertilizer, 75 Third St., N. W. Atlanta 8, Georgia.

FOR SALE: 2-7'6" x 55' and 80" x 65' Rotary Dryers, 3 - Louisville 6" x 50' Rotary Steam Tube Dryers, also Mixers, Storage Tanks, Screens, Elevators. Send us your inquiries. BRILL EQUIPMENT COMPANY, 2401 Third Ave., New York 51, N. Y.

FOR SALE: Dewatering Presses, Davenport #1A, #2A, #3A, Louisville 8-roll 36". Aluminum Tank 4,000 gal. (2) Louisville Rotary Steam Tube Dryers, 6'x50', 6'x25'. Screw Conveyor, Trough Belt Conveyor, Bucket Elevator, Bins, etc. PERRY EQUIPMENT CORP. 1426 N. 6TH ST., PHILADELPHIA 22, PA.

CLOSE-OUT OF USED EQUIPMENT: Troughing Idler, Flight, Bag, Package and Portable Conveyors; Crushers, Vibrating Screens, Feeders, Bins, Motors, and other equipment. All rebuilt and guaranteed. Write for free Catalog and price list. Bonded Scale and Machine Company, 2189 South Third Street, Columbus 7, Ohio. Phone: HIckory 4-2186.

INDEX TO ADVERTISERS

ARKANSAS GRADE HEARING

The State Plant Board will hold a Public Hearing at the Albert Pike Hotel, Little Rock, Arkansas May 28, 1959 at 8:00 P. M., to determine the ratios and minimum grades of mixed commercial fertilizers which may be sold in Arkansas for the period July 1, 1959 thru June 30, 1960.

The following ratios and minimum grades are proposed for 1959-60:

Ratio	Minimum Grade	Ratio	Minimum Grade	Ratio	Minimum Grade
0-1-1	0-20-20	1-1-1	8- 8- 8	1-2-2	5-10-10
0-1-2	0-10-20	1-1-2	9- 9-18	1-4-4	3-12-12
0-2-3	0-20-30	1-2-0	10-20- 0	2-1-1	14- 7- 7
1-0-1	14- 0-14	1-2-1	6-12- 6	2-1-2	10- 5-10
				3-4-6	6- 8-12

North Dakota Shows Record Fertilizer Use

The latest fertilizer tonnage report from the North Dakota Laboratories shows that farmers of the state used more mixed fertilizer and more fertilizer materials than ever before in the state's history, R. O. Baird, laboratories director, has announced.

Mixed fertilizer tonnage, as has been the case for the past few years, remained at about the same level, with 1958 showing only a few hundred tons more than 1957. However, the big gains have been in fertilizer materials, Baird said. This category has jumped more than 50 thousand tons in just the last four years.

Tonnage for mixed fertilizer used in 1958 totals 20,868.9 compared with 20,676 for 1957.

In the fertilizer materials department, the report shows only 20 thousand tons total sold in 1951, just under one-fifth the amount sold in 1958 when farmers and ranchers bought a record high of 112,473 tons of fertilizer materials.

Here's the tonnage for the past few years: 1951—20,810.3; 1952—34,127.8; 1953—41,158.3; 1954—48,-642.5; 1955—58,693.3; 1956—76,199.3; 1957—98,935.5; and 1958—112,473.2.

Virginia Okays Bulk Fertilizer-Pesticide Mixes

Virginia's Division of Chemistry and Foods has announced that all grades of fertilizer-pesticide mixtures containing aldrin or heptachlor which have previously been approved for the 1959 season for use on corn and/or peanuts may be distributed in bulk under the same conditions as outlined for the bulk distribution of heptachlor mixtures for alfalfa. Vehicles which have already been approved by this office for bulk transportation or distribution of fertilizer-heptachlor mixtures for alfalfa do not require further approval.

Georgia Mixers 'Gave Away' $400,000 in Fertilizer in '58

The Georgia control office reports that 8,000 official fertilizer samples were made and analyzed this past year. It was found that they averaged 35¢ per ton overage between the claimed values and the found values

Applying that figure to the 1,230,-000 tons of fertilizer sold in the state meant that the fertilizer industry furnished free $400,000 worth of fertilizer to the farmers.

The department found only 193 samples representing 1,554 tons of fertilizer improperly mixed on which it was necessary by law to assess penalties.

CF Staff—Tabulated TONNAGE REPORTS

FERTILIZER TONNAGE REPORT (in equivalent short tons) Compiled by Cooperative State Control Officials and Tabulated by COMMERCIAL FERTILIZER Staff

STATE	March 1959	March 1958	February 1959	February 1958	January 1958	January 1957	July-December 1958	July-December 1957	January-June 1958	January-June 1957	YEAR (July-June) 1957-58	YEAR (July-June) 1956-57
Alabama	.....	184,939*	56,732	46,709	22,378	14,989	199,265	172,721	734,062	808,901	906,783	983,614
Arkansas	83,695	48,121	21,308	19,342	8,769	8,456	64,092	62,752	226,889	265,235	289,641	325,150
Georgia	93,991	75,684	41,056	36,031	40,246	34,593	294,751	269,529	944,618	980,824	1,214,417	1,234,383
Kentucky	.....	47,648*	.....	33,137*	.....	58,756*	98,504	88,771	435,023	444,107	523,794	534,391
Louisiana	55,383	46,948	13,776	13,938	10,101	6,779	64,152	64,192	232,743	200,277	296,935	271,406
Missouri	.....	39,050*	30,831	25,353	24,637	15,042	370,036	335,312	420,615	460,487	755,927	791,830
N. Carolina	.....	279,057*	133,076	92,288	99,676	66,664	228,055	199,466	1,261,685	1,300,353	1,461,131	1,516,587
Oklahoma	14,928	9,903	7,990	6,147	2,883	4,110	68,848	51,436	55,964	52,836	107,400	107,345
S. Carolina	242,056	206,229	87,345	55,527	56,071	25,022	134,202	116,874	615,733	694,571	732,607	817,500
Tennessee	101,386	66,080	32,137	12,981	17,374	5,053	127,116	135,717	307,182	383,457	442,889	524,638
Texas	113,146	93,130	61,617	45,897	38,325	24,498	222,800	213,801	452,327	392,770	666,128	595,176
California	(reports compiled quarterly)						450,767	441,969	679,577	663,484	1,123,235	1,079,748
Oregon	(reports compiled quarterly)						50,176	44,793	132,511	138,926	177,304	201,073
Virginia	(reports compiled quarterly)						160,178	140,783	549,773	600,158	690,556	754,233
Indiana	(reports compiled semi-annually)						316,260	284,959	795,506	781,268	1,080,465	1,087,185
New Hampshire	(reports compiled semi-annually)						4,746	3,996	16,053	15,730	20,019	18,983
Washington	(reports compiled semi-annually)						75,350	77,498	158,286	110,242	235,784	165,951
TOTAL	**704,585**	**545,095**	**485,868**	**354,213**	**320,460**	**350,721**	**2,830,794**	**2,708,565**	**8,018,547**	**8,293,626**	**10,725,015**	**11,009,193**

..... (not yet reported)

* Omitted from column total to allow comparison with same period of current year.

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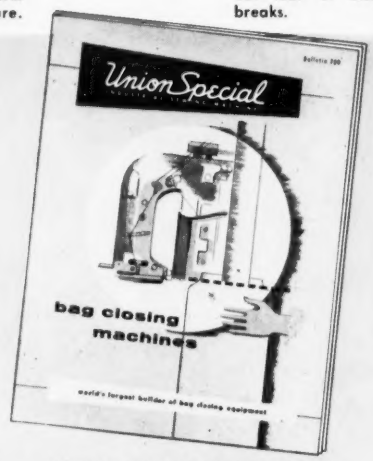

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